WILCOM

A PLANTRONICS COMPANY

MODEL T302
SIGNALING SENDER

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PART NUMBER: 06804694
Issue 2, March 1983

MODEL T302
SIGNALING SENDER

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Appendix A DTMF Tone Pairs
Appendix B MF Tone Pairs

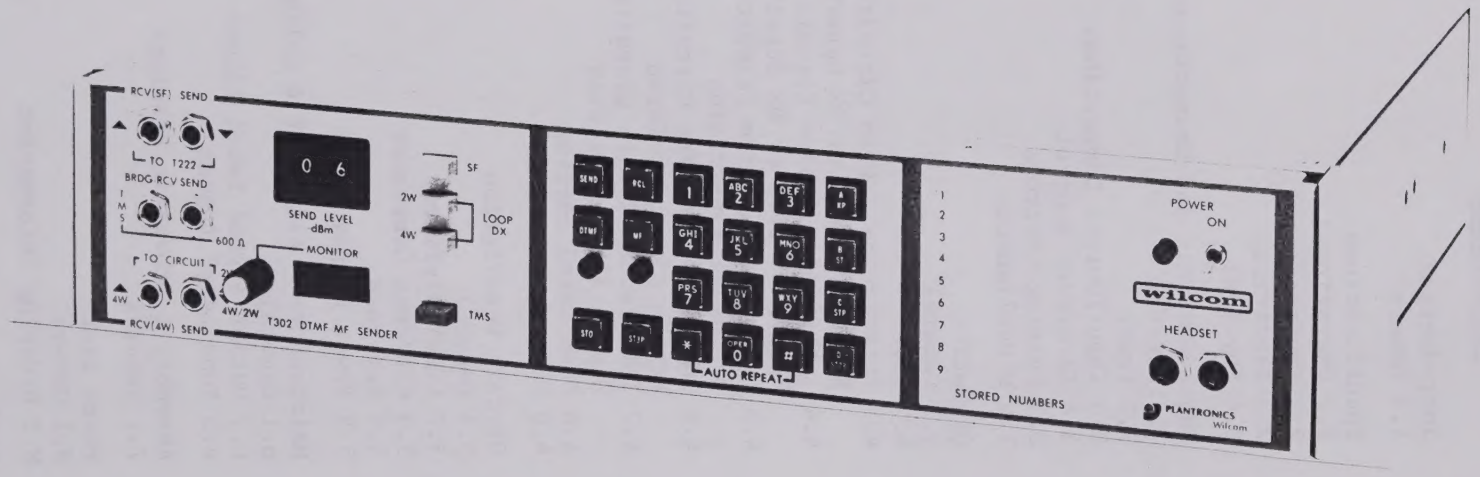

Figure 1-1

Wilcom Model T302
DTMF/MF SENDER

1.0 INTRODUCTION

1.1 General - The Model T302 is a microprocessor-controlled, rack-mounted sender designed for use with the Model T222CR Signaling Test Set.

1.1.01 The T302 superimposes DTMF or MF pulsing onto the on/off hook supervision provided by the T222CR. The T302/T222CR combination provides dial address information in DTMF, MF or Dial pulsing on the following types of signaling circuit.

2 wire loop, 4 wire loop
2 wire DX, 4 wire DX
2 wire E&M, 4 wire E&M
4 wire SF

Supervision on these circuit types may be loop, SF, DX or E&M.

1.1.02 A front panel directory area is provided for recording commonly used numbers which have been stored in the nine memory locations. An internal battery is provided to prevent losing the stored numbers during ac power failure.

1.1.03 The internal monitor speaker provides the means to listen to the circuit being tested. The headset jacks provide a means for voice communications during testing.

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2.0 SPECIFICATIONS

2.1 Operational:

Tone Outputs:
DTMF - 0 thru 9, A, B, C, D, *, #.
MF - 0 thru 9, KP, ST, STP, ST2P, ST3P.

Output Level:
0 thru -39 dBm; 1 dB steps thumbwheel setting is per tone for DTMF and MF.
SF level is equal to the T222CR SF Send Level less the T302 SEND LEVEL.

Level Accuracy: ±1.0 dB

Frequency Accuracy:
DTMF and MF - ±0.5%

Pulsing Speed:
DTMF - 68 ms tone on, 68 ms tone off.
MF - 68 ms tone on, 68 ms tone off (except KP which is 100 ms tone on)

Pulsing Accuracy: ±2 ms

Auto Repeat Interval: Selectable 1 thru 10 seconds in 1 second increments.

Output Impedance: 600 ohms ±10%

Input Terminating Impedance:
600 ohms ±10%

2.2 Environmental:

Operating Temperature: 0 to 50°C

Humidity: 95% at 35°C
40% at 50°C

Storage Temperature: -55°C to +70°C

Altitude: (non-operating) 15,000 meters

2.3 Electrical:

115 Vac or 230 Vac ±10%, 50/60 Hz (factory option).

2.4 Physical:

Height: 3.50" (89 mm)
Width: 17.00" (432 mm)
Depth: 12.00" (305 mm)

Weight: 9 lbs. (4.08 kg)

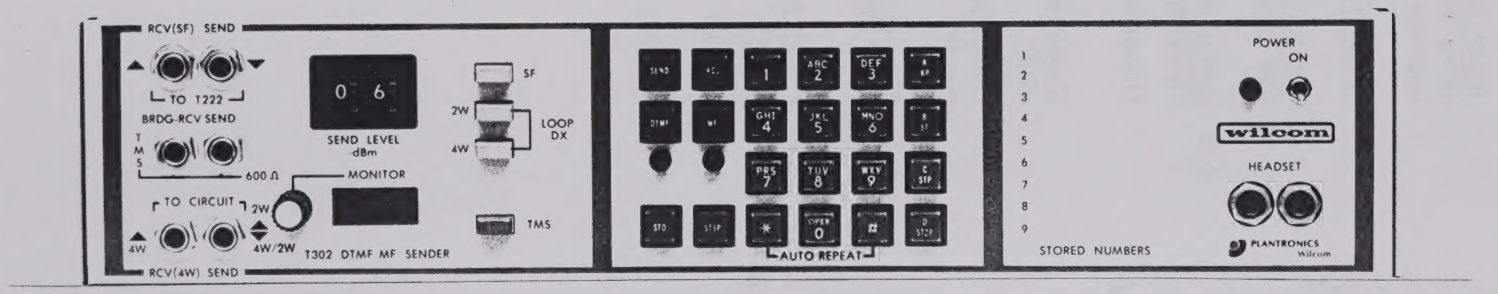


Figure 3-1

Front Panel Control

3.0 PANEL CONTROLS AND CONNECTIONS

3.1 General - This section describes the functions of each switch, lamp and jack located on the front panel of the Model T302. The description will be broken down into sections relating to power, input/output connections, interface controls, pulsing and miscellaneous.

3.1.01 Switch Action Definitions - There are three types of switches used in the T302. These are interlocked, momentary and push-push locking. Each type will be explained subsequently. The engaged condition is the "in" or low profile position and the released condition is the "out" or high profile position.

a. Momentary - This type switch remains "in" only as long as it is pressed. The switch returns to its original "out" or high profile as soon as pressure is removed.
b. Interlocked - Consists of a group of two or more switches. When any switch in a group is pressed, it automatically releases any other switch that was engaged. The engaged switch function continues until released by pressing another switch in that group.
c. Push-Push - This type switch remains engaged when pressed and must be pressed again to be released. The switch function continues as long as the switch remains engaged.

3.2 Power - The POWER ON Switch applies power to the set for operation and to charge the internal ni-cad battery.

3.2.01 ac Power Receptacle - The 3-prong male plug is recessed into the rear of the test set. The line cord supplied with the T302 provides ac power through this connection.

3.3 Input/Output Connections

3.3.01 TO T222:SEND - This 310-type jack provides the connection between the Sender and the T222CR for use in the following circuits: 2 or 4 wire loop, 2 or 4 wire DX and 4 wire SF.

3.3.02 TO T222:RCV(SF) - This 310-type jack provides the connection between the Sender and the T222CR for use in Single Frequency (SF) circuits. During all other testing this jack is vacant.

3.3.03 TMS: BRDG-RCV, SEND - These two 310-type jacks provide for connection of a balanced, dc blocked, high impedance bridging input transmission measuring set to the T302.

3.3.04 TO CIRCUIT: RCV(4W), SEND: 4W-2W - These two 310-type jacks provide the connections between the Sender and one of the following circuits: 2 or 4 wire loop, 2 or 4 wire DX, 2 or 4 wire E&M and 4 wire SF.

3.4 Interface Controls

3.4.01 The three interlocking with lockout interface control buttons provide the internal connections for the individual signaling functions as follows:

a. SF - This button, when engaged, allows the T222CR SF signal, on/off-hook condition to be coupled through the T302. The MF or DTMF address pulses from the T302 may be sent during the off-hook condition of the T222CR.
b. LOOP/DX: 2W - This button, when engaged, allows the T222CR Loop Send or DX supervision signals for 2-wire circuits to be coupled

through the T302. During the off-hook condition of the T222CR the T302 may be used to send MF or DTMF address signals onto the circuit under test.

c. LOOP/DX: 4W - This button, when engaged, allows the T222CR Loop Send or DX supervision signals for 4-wire circuits to be coupled through the T302. During the off-hook condition of the T222CR the T302 may be used to send MF or DTMF address signals onto the circuit under test.

3.4.02 TMS - This button, when engaged, blocks any SF signal coming from the T222CR and applies the TMS signal to the circuit. It also places the TMS in parallel with either the RCV(4W) or SEND 2W inputs depending on the selected interface type.

3.5 Pulsing Controls

3.5.01 DTMF, MF - Pressing one of these two momentary action pulse type select buttons will light the corresponding LED and instruct the T302 to send any digits using the indicated pulsing type when the SEND button is pressed.

3.5.02 SEND - Pressing this momentary action button instructs the T302 to send any digits previously entered or recalled from one of the nine memory locations. Pressing the button during outpulsing will stop the pulsing at the next tone off or inter-digit interval. Pulsing will resume with the first stored digit when the button is released.

3.5.03 STO - Pressing this momentary action button instructs the T302 to enter "store" mode. Up to nine, 20 digit numbers may be stored in memory locations 1 thru 9. To store a number at a given location, press STO followed by a single digit (1-9) corresponding to the desired memory location. Now enter the number to be stored by pressing the desired digits successively. Pressing any non-digit button completes the storage operation.

3.5.04 RCL - Pressing this momentary action button instructs the T302 to enter the "recall" mode. To recall a number from a given memory location, press RCL followed by the single digit corresponding to the desired storage area. The recalled number may now be sent by pressing the SEND button.

3.5.05 Digit buttons - These 16 buttons enter the individual digits for pulsing. Nominal frequencies for each digit tone pair are indicated in the Appendix. The digit buttons are functional in the different pulsing types as follows:

Digit Button	Pulsing Type
0 thru 9	DTMF, MF
A, B, C, D, *, #	DTMF
KP, ST, STP, ST2P, ST3P	MF

3.6 Miscellaneous

3.6.01 SEND LEVEL (-dBm) Thumb wheel - This switch sets the level of the tone output. For DTMF and MF, the setting indicates the output level of the individual tone referenced to a 0 dBm Transmission Level Point (TLP). For SF, the output level is equal to the T222CR SF LEVEL less the T302 SEND LEVEL setting.

3.6.02 MONITOR Control - This knob adjusts the sound level on the front panel monitor speaker or the headset. The speaker is disabled when a headset is connected to the jacks provided.

3.6.03 HEADSET _ This dual jack provides connection for a standard 52/53 type telephone headset or equivalent.

4.0 OPERATION

4.1 General - Refer to the T222C Operating Instruction Manual for all necessary connections and switch positions for the T222CR.

4.1.01 The TO T222:RCV(SF) jack on the T302 is used only when interfacing 4-wire circuits having SF supervision. During all other testing this jack is vacant.

4.2 Power - The T302 is powered by 115 volts ac. Connect the line cord, supplied with the Sender, to the recessed male connector in the rear of the unit. Plug the other end into any standard 115 Vac 60 Hz outlet. The internal battery, for CPU memory, is being charged when the set is turned on with ac power applied.

4.3 Interfacing 2-wire circuits having dc loop or DX supervision.
LOOP/DX: 2W button engaged.

4.3.01 Connections (Fig. 4-1, 4-2)

a. 2-wire loop circuits utilize the TO T222:SEND jack and the TO CIRCUIT:SEND jack for both send and receive test functions. The internal switching connects the headset/speaker monitor circuit across the TO CIRCUIT:SEND 2W jack. The output of the tone generator is connected to this jack in parallel with the dc pulsing circuit.

b. For transmission or noise measurements, the transmission measuring set (TMS) is connected to the jacks labeled TMS:BRDG-RCV, SEND. Since the TMS is connected in parallel with the TO CIRCUIT:SEND jack it should have a balanced, dc blocked, high impedance input to avoid possible distortion of the pulsing output.

4.3.02 Pulsing Types

a. Either MF or DTMF tone pulsing may be used when the LOOP/DX: 2W button is engaged. The correct pulsing type for the circuit function being tested is selected by pressing the corresponding button. Two LED's provide a visual indication of the selected pulsing type.

b. The tone sending levels are described in Section 4.8 and keyboard pulsing functions in Section 4.9.

4.4 Interfacing 4-wire circuits having dc loop or DX supervision.
LOOP/DX: 4W button engaged.

4.4.01 Connections (Fig. 4-3, 4-4)

a. 4-wire loop circuits are connected with the receive side to the TO CIRCUIT: RCV(4W) jack and the send side to the TO CIRCUIT: SEND jack. The output of the T302 tone generator is connected to the TO CIRCUIT:SEND jack. The dc pulsing circuit from the T222CR is connected in the simplex path between the TO CIRCUIT:RCV(4W) and TO CIRCUIT:SEND jacks.

b. For transmission or noise measurements, the transmission test set (TMS) is connected to the TMS:BRDG-RCV, SEND jacks.

4.4.02 Pulsing Types

a. Either MF or DTMF tone pulsing may be used when the LOOP/DX:4W button is engaged. The correct pulsing type for the circuit function being tested is selected by pressing the

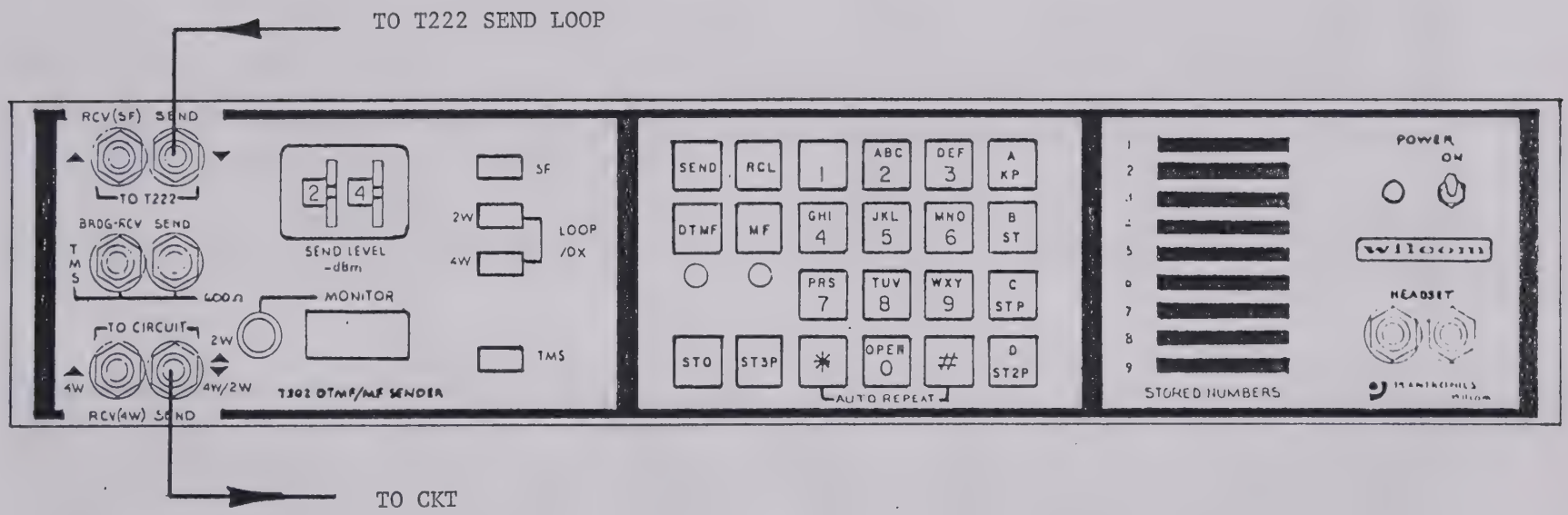


Figure 4-1 INTERFACING 2-WIRE CIRCUITS HAVING dc LOOP SUPERVISION

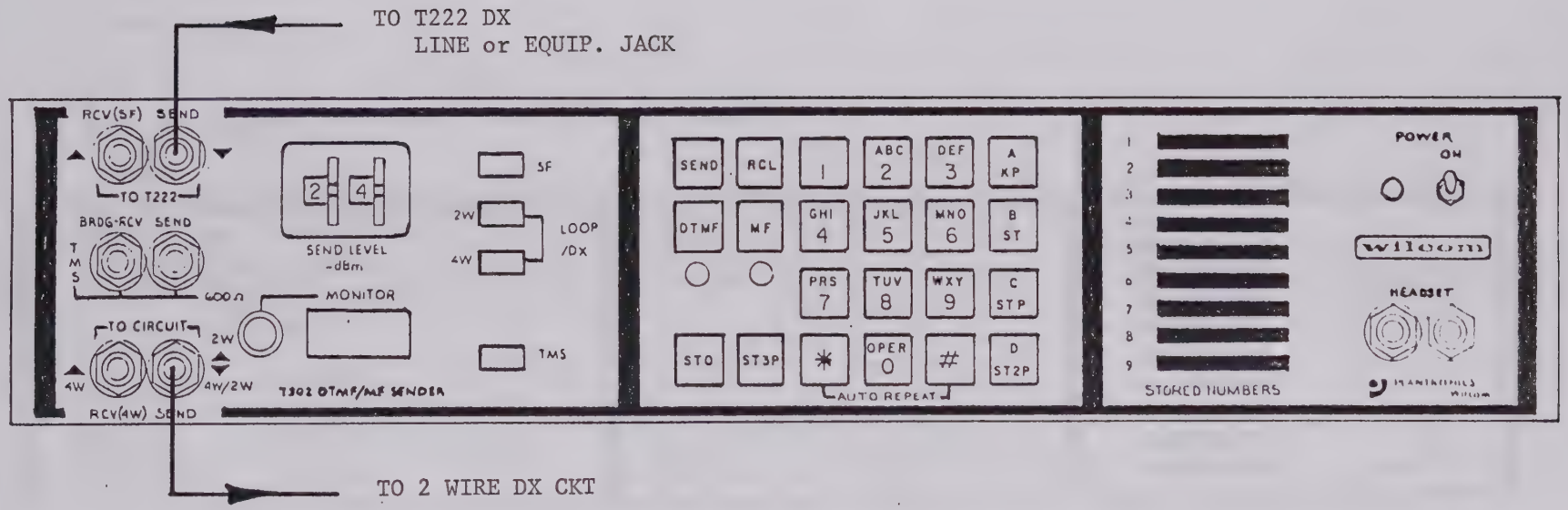


Figure 4-2 INTERFACING 2-WIRE CIRCUITS
HAVING DX SUPERVISION

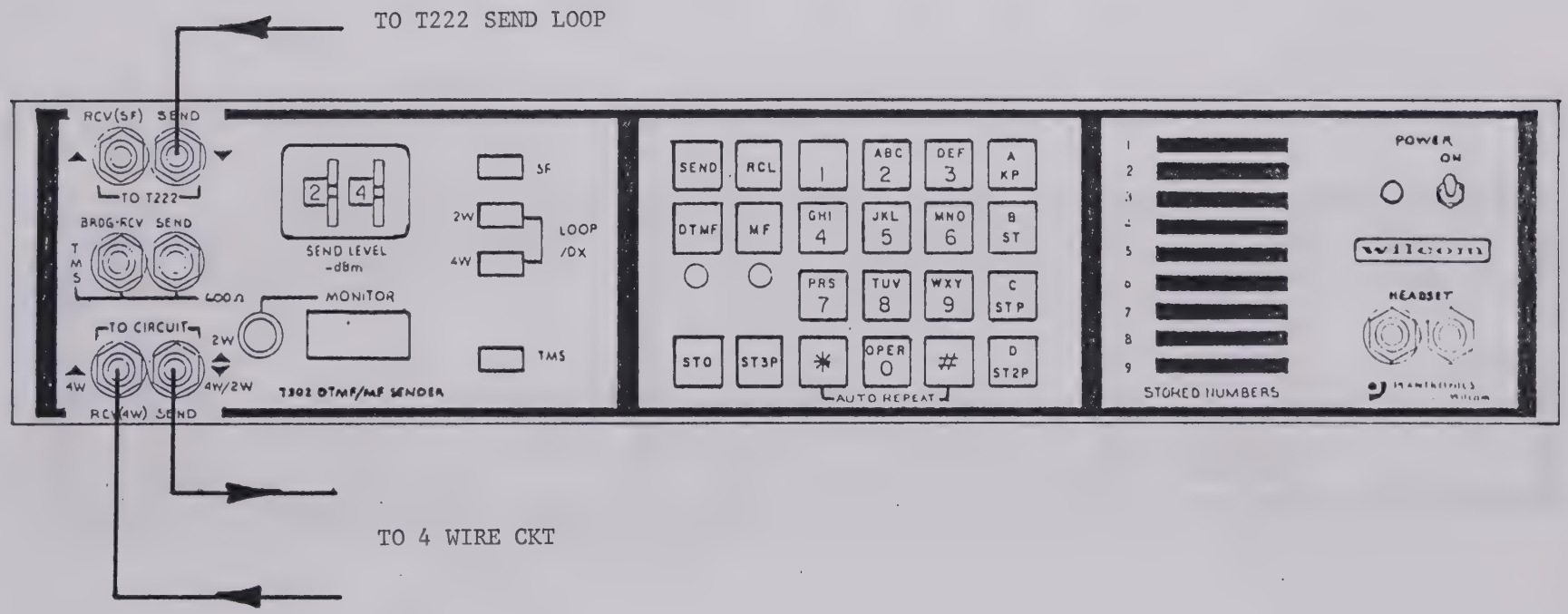


Figure 4-3 INTERFACING 4-WIRE CIRCUITS
HAVING dc LOOP SUPERVISION

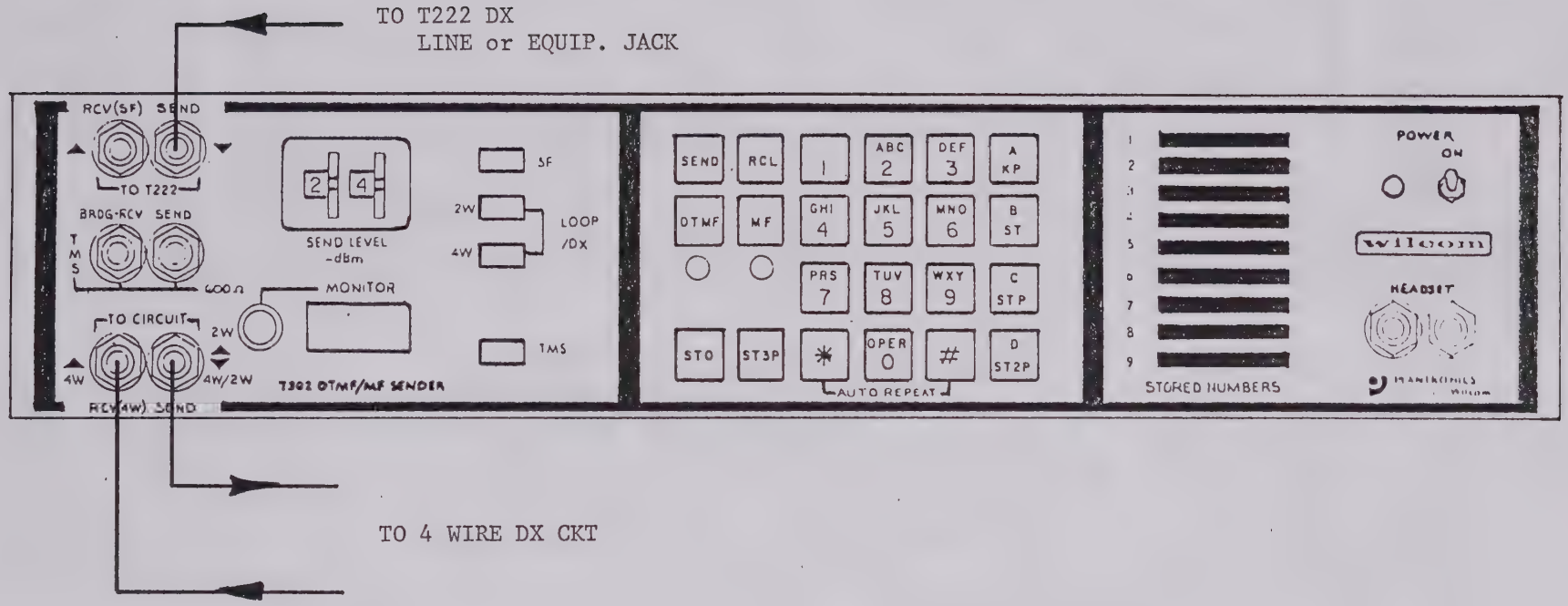


Figure 4-4 INTERFACING 4-WIRE CIRCUITS HAVING DX SUPERVISION

corresponding button. Two LED's provide a visual indication of the selected pulsing type.

b. The tone sending levels are described in Section 4.8 and keyboard pulsing function in Section 4.9.

4.5 Interfacing 4-wire circuits having SF supervision

SF Button engaged.

4.5.01 Connections (Fig 4-5)

a. 4-wire SF circuits are connected with the send side connected to the TO CIRCUIT:SEND jack and the receive side connected to the TO CIRCUIT:RCV(4W) jack. The TO T222:SEND jack must be connected to the T222 SF Send jack and the TO T222:RCV(SF) jack must be connected to the T222 SF receive jack.

b. For transmission or noise measurements, the transmission measurement set (TMS) is connected to the TMS: BRDG-RCV, SEND jacks. With the TMS switch engaged the incoming SF signal from the T222 is removed and replaced by the TMS SEND signal for application to the circuit under test.

4.5.02 Pulsing Types

a. Either MF or DTMF tone pulsing may be used when the SF button is engaged. The correct pulsing type for the circuit function being tested is selected by pressing the corresponding button. Two LED's provide a visual indication of the selected pulsing type.

b. The tone sending levels are described in Section 4.8 and keyboard pulsing functions in Section 4.9.

4.6 Interfacing 4-wire circuits having E&M supervision

LOOP/DX: 4W button engaged.

4.6.01 Connections (Fig 4-6)

a. 4-wire E&M circuits are connected with the transmission send side connected to the TO CIRCUIT: SEND 4W jack and the transmission receive side is connected to the TO CIRCUIT:RCV(4W).

b. The E&M lead from either the LINE or DROP jack on the T222CR is connected to the signaling circuit.

c. For transmission or noise measurements, the transmission measurement set (TMS) is connected to the TMS:BRDG-RCV, SEND jacks.

4.6.02 Pulsing Types

a. Either MF or DTMF tone pulsing may be used when the LOOP/DX: 4W button is engaged. The correct pulsing type for the circuit function being tested is selected by pressing the corresponding button. Two LED's provide a visual indication of the selected pulsing type.

b. The tone sending levels are described in Section 4.8 and keyboard pulsing functions in Section 4.9.

4.7 Interfacing 2-wire circuits having E&M supervision

LOOP/DX: 2W button engaged.

4.7.01 Connections (Fig 4-7)

a. 2-wire E&M circuits are connected with the transmission send/receive side connected to the TO CIRCUIT: SEND 4W/2W jack.

b. The E&M lead from either the LINE or DROP jack on the

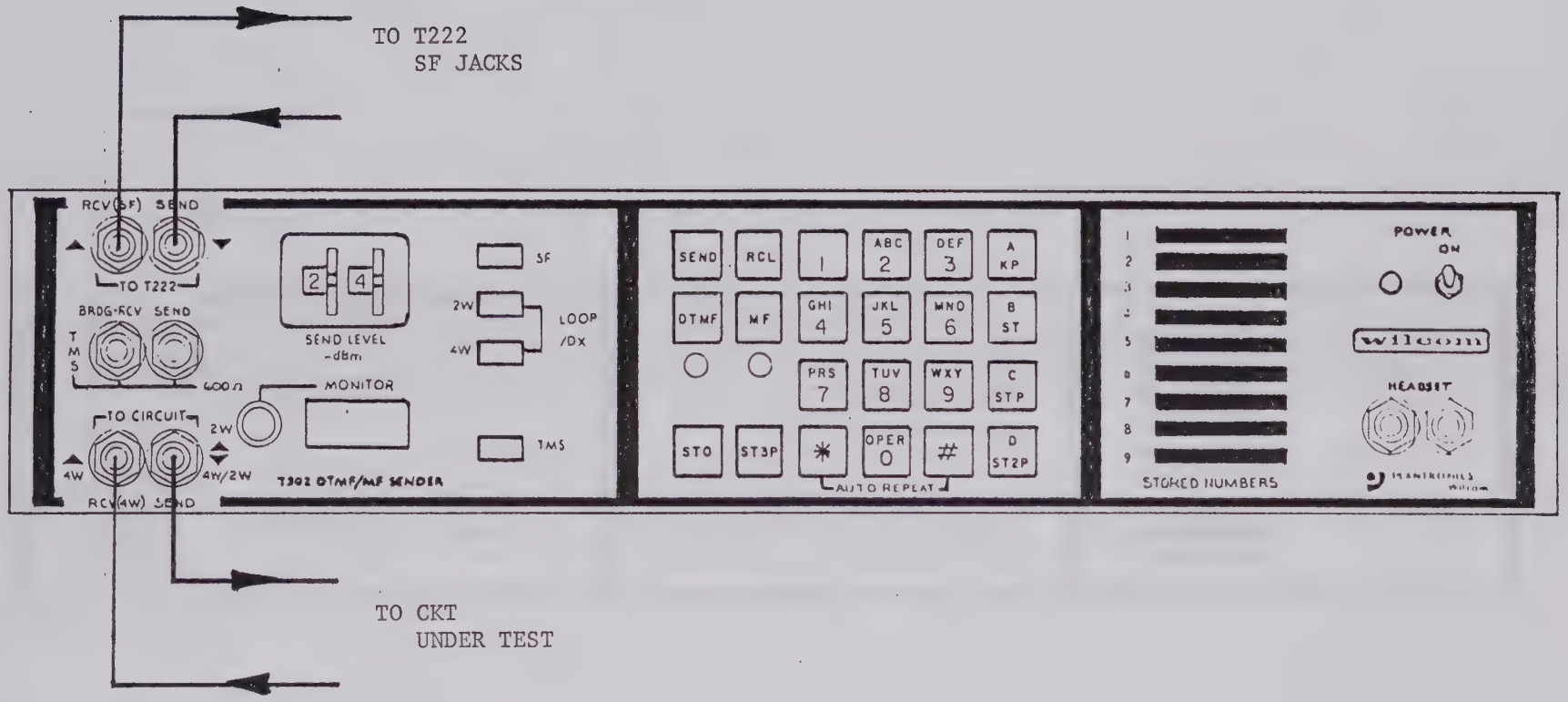


Figure 4-5 INTERFACING 4-WIRE CIRCUITS
HAVING SF SUPERVISION

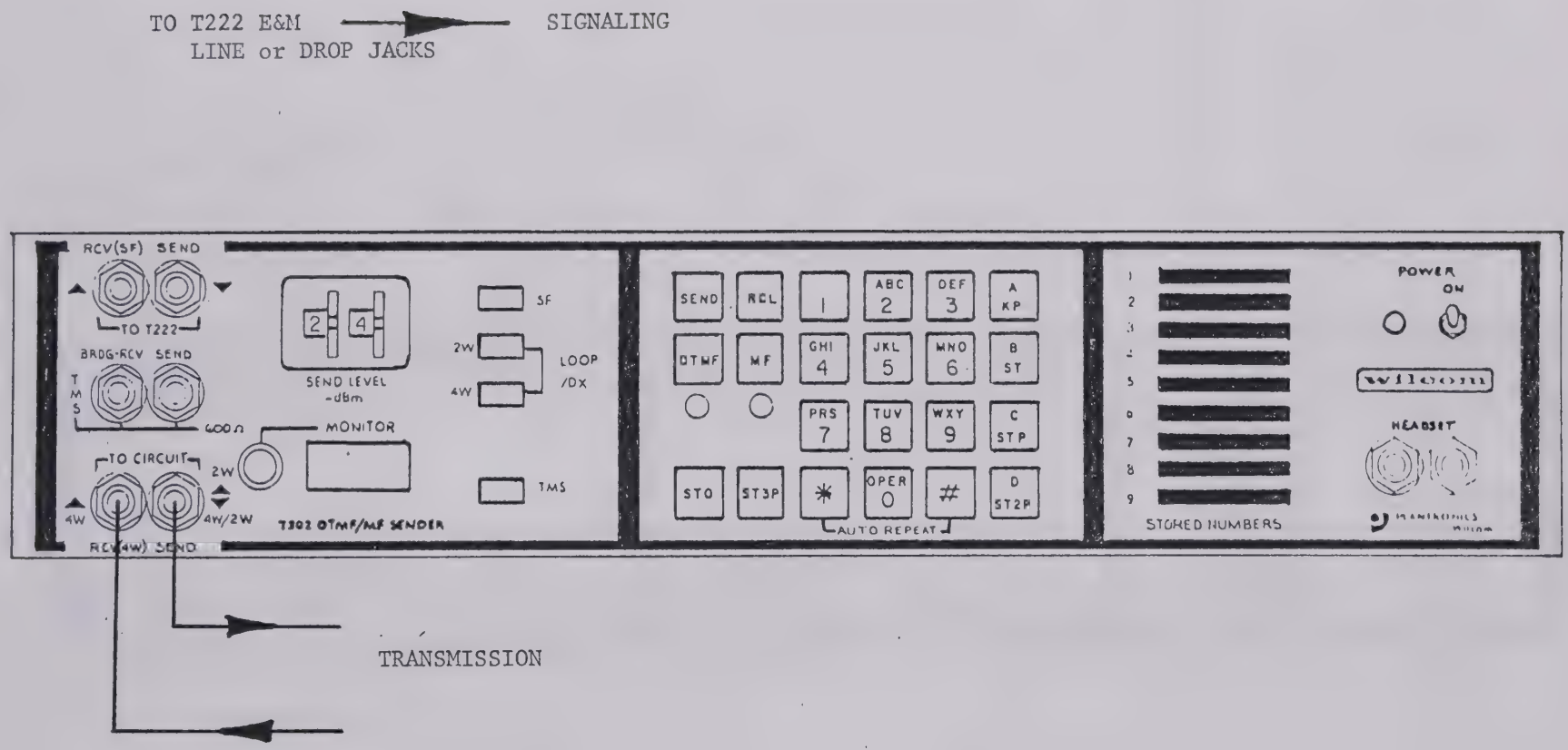


Figure 4-6 INTERFACING 4-WIRE CIRCUITS
HAVING E&M SUPERVISION

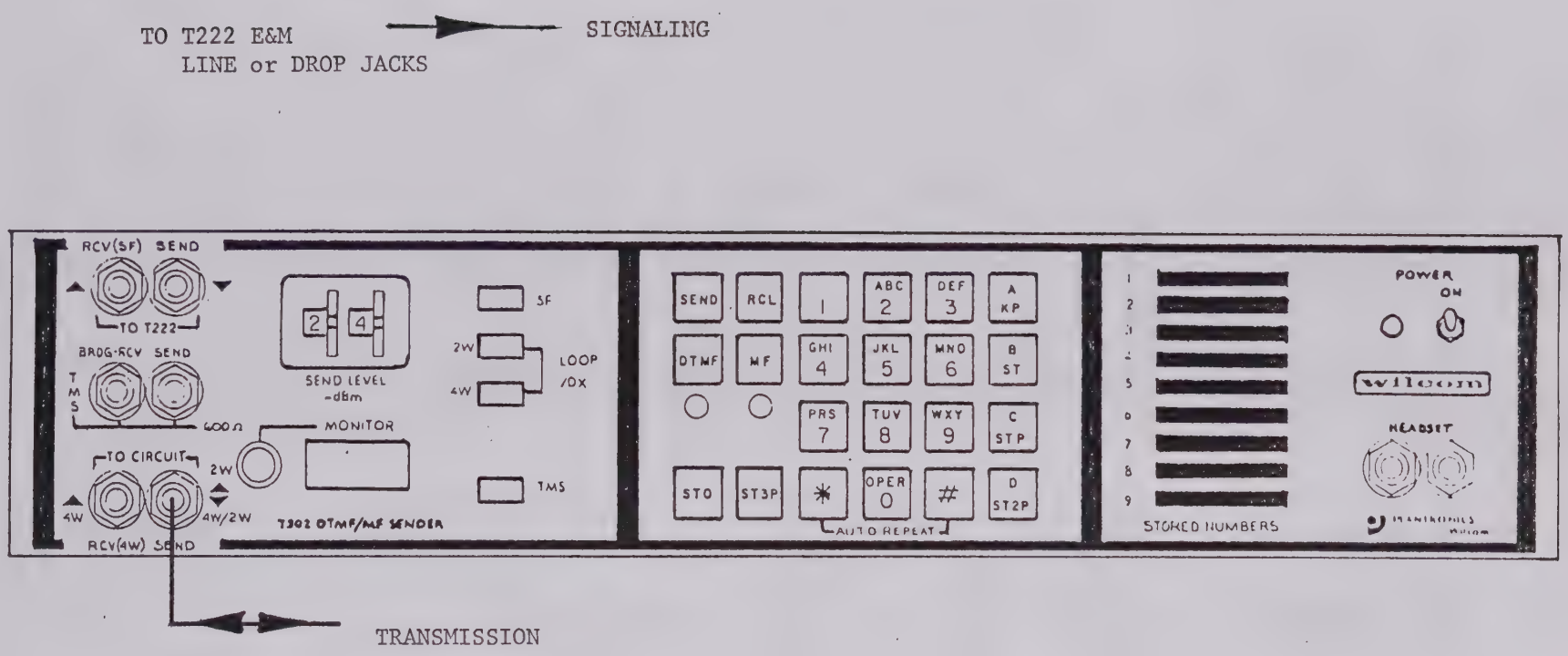


Figure 4-7 INTERFACING 2-WIRE CIRCUITS
HAVING E&M SUPERVISION

T222CR is connected to the signaling circuit.

c. For transmission or noise measurements, the transmission measurement set (TMS) is connected to the TMS: BRDG-RCV, SEND jacks.

4.7.02 Pulsing Types

a. Either MF or DTMF tone pulsing may be used when the LOOP/DX: 2W button is engaged. The correct pulsing type for the circuit function being tested is selected by pressing the corresponding button. Two LED's provide a visual indication of the selected pulsing type.

b. The tone sending levels are described in Section 4.8 and keyboard pulsing functions in Section 4.9.

4.8 Send Level Setting

4.8.01 MF and DTMF Levels

a. The SEND LEVEL, -dBm thumbwheel indicates the per tone sending level of the T302. Most MF transmitters presently used in toll switchboards, testboards, test frames and senders have a nominal per tone level of -6dBm at the zero transmission level point.

4.8.02 SF Levels

a. The SF sending level of the T302 is equal to the T222CR SF Level less the T302 attenuator setting.

b. When testing at the +7 TLP of a typical SF signaling system, the Send Level thumbwheel of the T222C is set to "13". These settings will provide the following levels: On Hook, -13dBm; pulsing, -13 dBm.

c. When testing at the -16 TLP of a typical SF signaling system, the Send Level thumbwheel of the T302 is set to "16". The Send Level thumbwheel of the T222C is set to "20". These settings will combine to provide the following levels: On Hook, -36 dBm; pulsing, -36 dBm.

4.9 Pulsing Functions

4.9.01 Pulsing Type Selection

a. DTMF - When this button is pressed, the T302 tone generator will output composite tone pairs with frequencies as indicated in Appendix A for each digit.

b. MF - When this button is pressed, the T302 tone generator will output composite tone pairs with frequencies as indicated in Appendix B for each digit.

4.9.02 Sending a Number

a. Select the desired pulsing type, interface type and send level setting.

b. Enter the digits for the number you wish to send. Up to 20 digits may be entered.

c. Press the SEND button. The headset/speaker monitor circuit provides an audible indication of the pulsing. The DTMF or MF LED will blink during the selected out pulsing.

d. The number may be sent as many times as desired by repeatedly pressing the SEND button. For AUTO REPEAT function see section 4.9.05.

e. To send a new number, enter the digits for the new number and press the SEND button.

4.9.03 Storing a Number

a. Up to nine different numbers, each having a maximum of 20 digits may be stored in the T302 and individually recalled for sending. A front panel directory area is provided for recording commonly used numbers which have been stored in the nine memory locations.

b. To enter a number in the memory, press the STO button followed by a single digit, 1 through 9, which represents a location in the memory. The number to be stored is then entered by pressing each desired digit button in sequence.

c. To end the storage operation, press any non-digit button.

4.9.04 Recalling a Stored Number

a. To send a stored number, press the RCL button followed by the single digit, 1 through 9, which represents the memory location for the desired number.

b. Select either DTMF or MF pulsing by pressing the appropriate momentary button. The LED located below the button pressed will light.

c. Select the desired SEND LEVEL setting with the thumbwheel switch.

d. Press the SEND button. The headset/speaker monitor circuit provides an audible indication of the pulsing. The LED for the selected pulsing type, DTMF or MF, will blink during pulsing. The number may be repeated as many times as desired by pressing the SEND button repeatedly. For AUTO REPEAT function see Section 4.9.05.

4.9.05 Automatically Repeating a number

a. To enter the AUTO REPEAT mode, press * and # simultaneously. Then set the repeat rate by pressing a single digit button, 1 through 9 or 0, to repeat at 1 through 9 or 10 second intervals. When the interval digit is pressed, the previously entered number sequence will be sent and then repeated at the selected interval.

b. To stop the repeat operation, press one of the two pulse type select buttons.

5.0 CIRCUIT DESCRIPTION

5.1 General - This section provides a circuit description which explains the operation of the Model T302. Schematics in Section 7.0 will be helpful when studying the circuit description or when troubleshooting the unit. The T302 can be divided into the following circuits:

Line Interface
CPU/Tone Generator
Keyboard
Power Supply

5.2 Line Interface - This assembly contains the receive signal amplifier, speaker amplifier, gain control buffer, send level attenuator, send output buffer, and all interfaces for circuit connection.

5.2.01 The receive signal amplifier U1 provides an adequate signal level to the speaker amplifier U2 through the MONITOR control located on the front panel.

5.2.02 The gain control buffer U3B and associated circuitry provides a 0 dB output level into 600 ohms. This output is then applied to the send level attenuator network of R32-R35, U3A and R36-R45 before being sent to the output buffer U1.

5.2.03 The interface circuitry has been simplified by the use of the symbols (X) for normally open contacts and (-) for normally closed contacts. A letter beside these symbols refers to a particular switch function. A legend chart is provided in the lower right of Figure 7-2 to designate the switch function involved. All switches are shown in the released (out) or high profile position.

5.3 CPU/Tone Generator - This assembly contains a microprocessor and logic for number storage, keyboard scanning, tone generation and filtering.

5.3.01 The CPU, U2, executes the program object code stored in U4. A 1.664 MHz ±0.01% square wave generator consisting of U3 and Y1, has an output that is pulled high to satisfy the clock requirements of U2.

5.3.02 Address Decoder U1 decodes addresses output by the CPU to select PROM U4, RAM U5 and U6, keyboard buffers U15 and U16 or latches U9, U12 and U14. Address lines A0-A2 scan the rows of the keyboard matrix. The matrix columns are input to the CPU via buffers U15 and U16. The system software scans the keyboard rows while checking the column data for a "high" signal indicating that a key has been pressed. The program then determines which key has been pressed and interprets that key, executing command keys and saving digit keys.

5.3.03 Control latch U14 drives the DTMF and MF LED's on keyboard A4. The control latch also outputs the following control signal to the Line Interface Board:

SEND/$\overline{\text{TALK}}$ - mutes the headset transmitter while a tone is being output.

5.3.04 Additional circuitry on the CPU/Tone Generator includes; U8 and U11, which are dual programable 4 bit divide by n counters programed under software control by latches U9 and U12, output 10 times the frequency of the transmitted tone; U7 and U10 are decade counters whose 1 of 10 decoded outputs are sine weighted by R13 through R32; U17C sums the two 10 point sine currents output by U7 and U10; the remainder of U17 forms a six pole low pass filter which removes the clock component at 10 times the frequency output; finally, U19 forms a power failure detector which powers down the two CMOS RAMS U5 and U6 if the T302 power is

switched off. Meanwhile, while BT1 continues to power the RAMS thereby protecting any numbers stored in memory.

5.4 Keyboard - This assembly contains the DTMF and MF pulse selection indicator LED's along with the matrix switches which form the keyboard.

5.4.01 Electrically, the keyboard is arranged as a 3-by-8 matrix not fully populated. Address lines A0-A2 scan the rows of the matrix while the matrix columns are input to the CPU/Tone Generator on data line D0-D7.

5.5 Power Supply - This assembly contains a bridge rectifier, ±12 volt and ±5 volt regulators and filter capacitors.

5.5.01 Local ac power is supplied to the bridge rectifier through the power transformer T1 mounted on the T302 chassis. Switch S1 on the front panel turns the unit ON. The input fuse, F1, is rated at 1 amp.

6.0 MAINTENANCE - ALIGNMENT AND CALIBRATION

6.1 General - This section describes procedures that may be followed to insure proper calibration of the Model T302 DTMF/MF SENDER. The T302 is fully calibrated at the factory prior to shipment and should require no further adjustments. All Wilcom Products, Inc., test equipment is covered by a one year warranty. The warranty can be found at the beginning of this manual. If the unit needs to be serviced, the following paragraphs will serve as a guide to the adjustments that should be checked.

6.1.01 Field repair of the Model T302 is NOT recommended unless the repair will be made in a well equipped repair center. The technicians performing the repair should be familiar with digital circuitry, logic functions and state-of-the-art semiconductor design. If repair cannot be accomplished by following the procedures described below, a brief review of the Circuit Description in Section 5.0 may be beneficial.

6.1.02 If local repair is not possible, return the entire unit for repair as indicated in the Warranty. The unit may be sent to either of the following addresses;

PLANTRONICS/Wilcom
Box 508, Daniel Webster Highway
Laconia, NH 03247
ATTN: Repair Dept.

Phone: (603)524-2622

or

PLANTRONICS/Santa Cruz
108 DuBois Street
Santa Cruz, CA 95060
ATTN: PLANTRONICS/Wilcom
Repair Center

Phone: (408)426-5858

6.2 Output Adjust - This procedure provides for calibration of the gain control buffer U3B.

a. Apply ac power to the T302 and switch POWER to ON. The POWER ON LED should illuminate. The DTMF LED should also come on.
b. Apply a 0 dB SF Signal to the 600 ohm impedance of J3, the TO T222 SEND jack. Engage the SF switch A3S2. The TMS switch A3S5 should be released or in the "out" position.
c. Monitor the signal level at J5 and adjust A3R16 for 0 dB output into 600 ohms.
d. Verify all attenuator switch settings to be accurate within ±1 dB of setting.

6.3 Tone Level Adjust - This procedure provides for calibrating the tone level received from the CPU/Tone Generator.

a. Apply ac power to the T302 and switch POWER to ON. The POWER ON LED should illuminate. The DTMF LED should also come on.
b. Engage switch A3S4 for 4W operation. Simultaniously press the MF and STO keys on the keyboard. Both the DTMF and MF LED's should illuminate.
c. Press digit 5 on the keyboard. This locks the T302 into a continuous DTMF digit 1 output.
d. Terminate J5 with 600 ohms and monitor the voltage with a true RMS voltmeter.
e. Adjust A3R25 for a reading of 1.094 V rms. To return the T302 to normal operation; switch POWER to off, wait a few seconds, then switch POWER back ON.

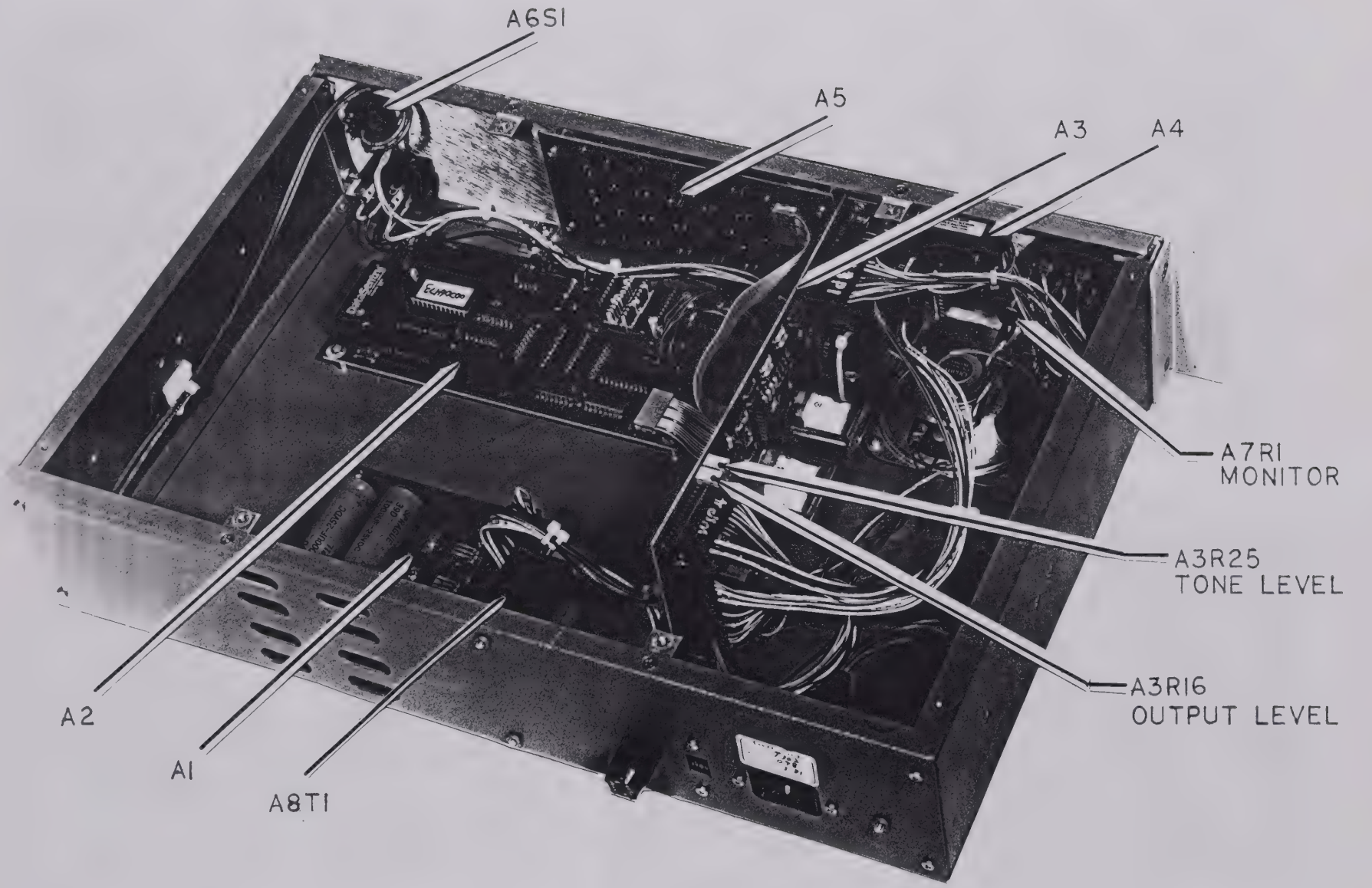


Figure 6-1
Overall Assembly

7.0 ASSEMBLY AND SCHEMATIC DRAWINGS

7.1 General - This section provides all of the assembly and schematic drawings for the Wilcom Model T302 DTMF/MF SENDER. These will be useful in troubleshooting and servicing the unit should a problem arise.

7.1.01 The printed circuit board assembly and its associated schematic are arranged side-by-side to facilitate troubleshooting and component location.

7.1.02 Each matching assembly and schematic are assigned an "A" reference designator. All components located on an assembly are understood to be prefixed by the "A" reference designator. Eg. the CPU intergrated circuit U2 on the CPU/ Tone Generator is specifically identified as A2U2.

7.1.03 Specific component information may be found in section 8.0 by matching the assembly "A" reference designator, 2xxxxxxx number or both to the appropriate parts list.

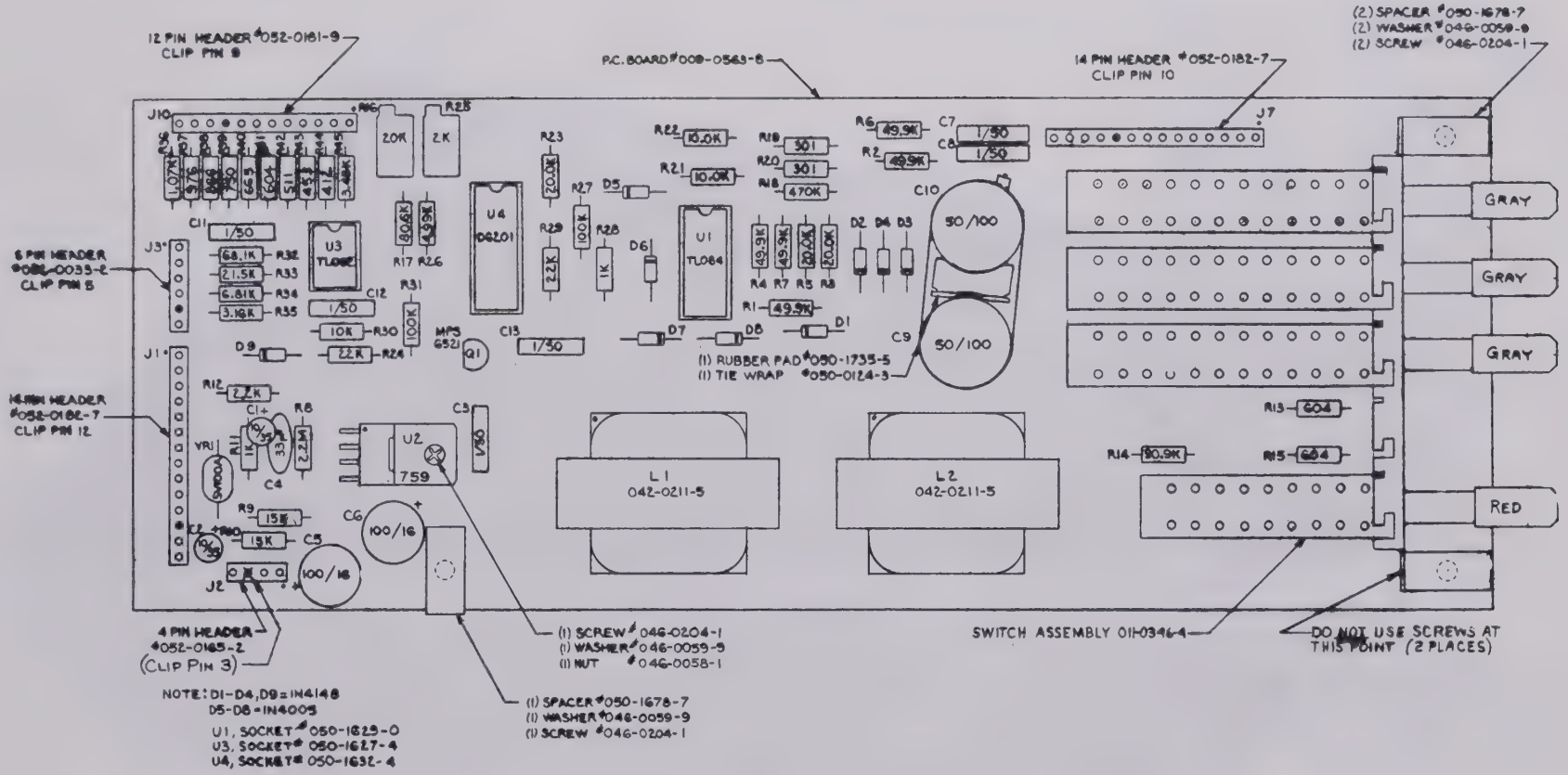


Figure 7-1

P C Assembly, Line Interface (A3)

200-1528-5 REV A

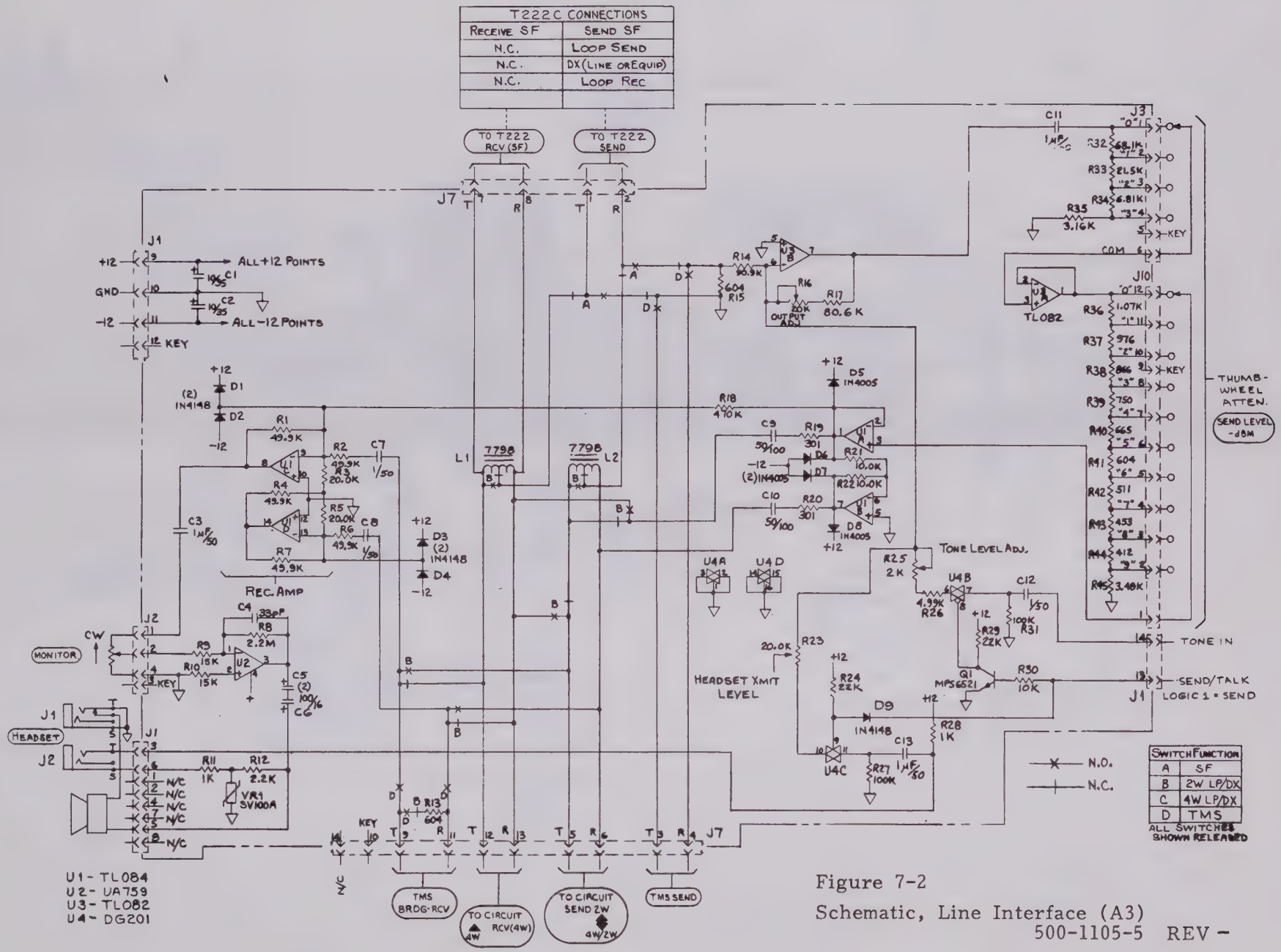


Figure 7-2
Schematic, Line Interface (A3)
500-1105-5 REV -

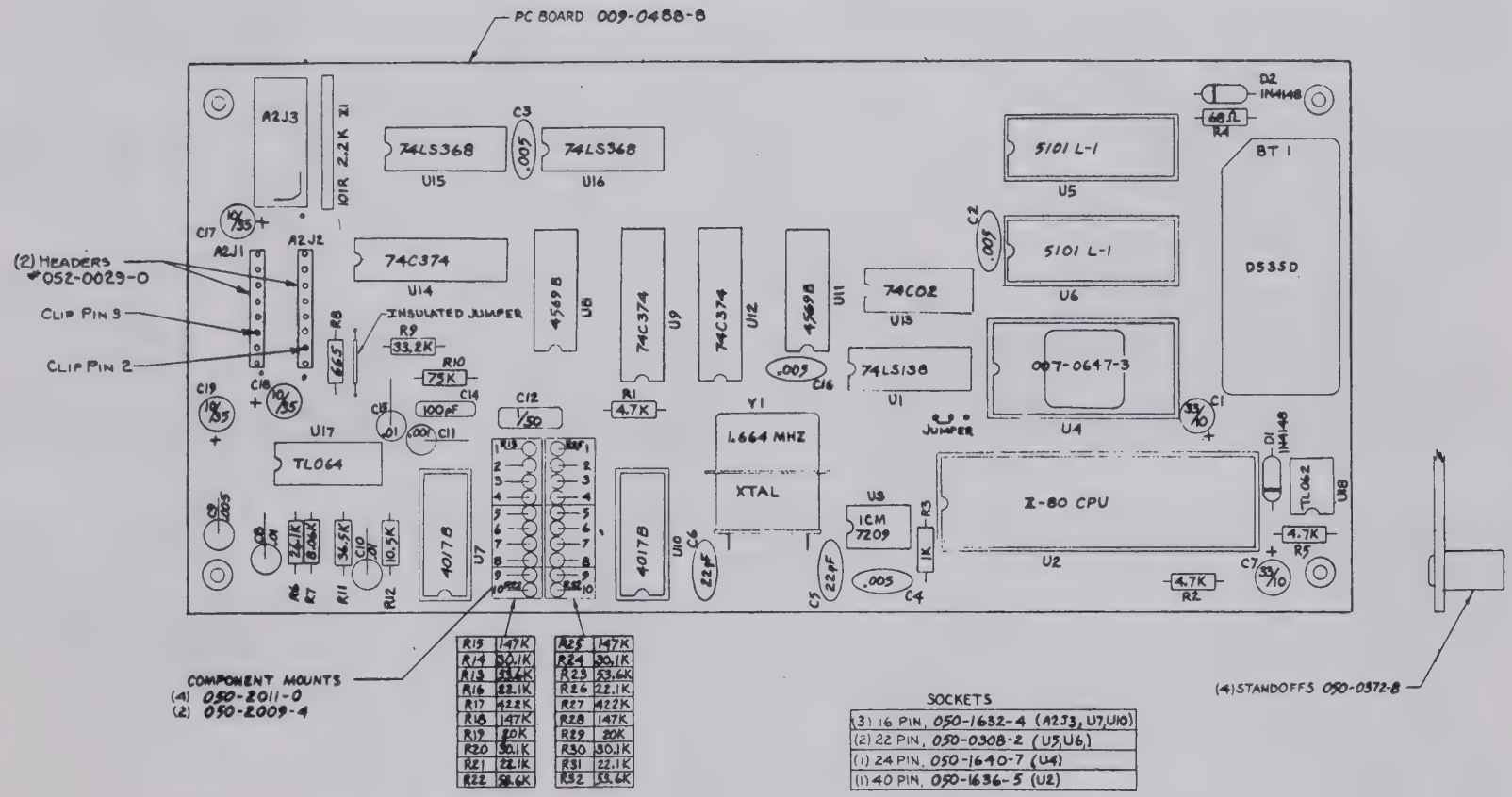
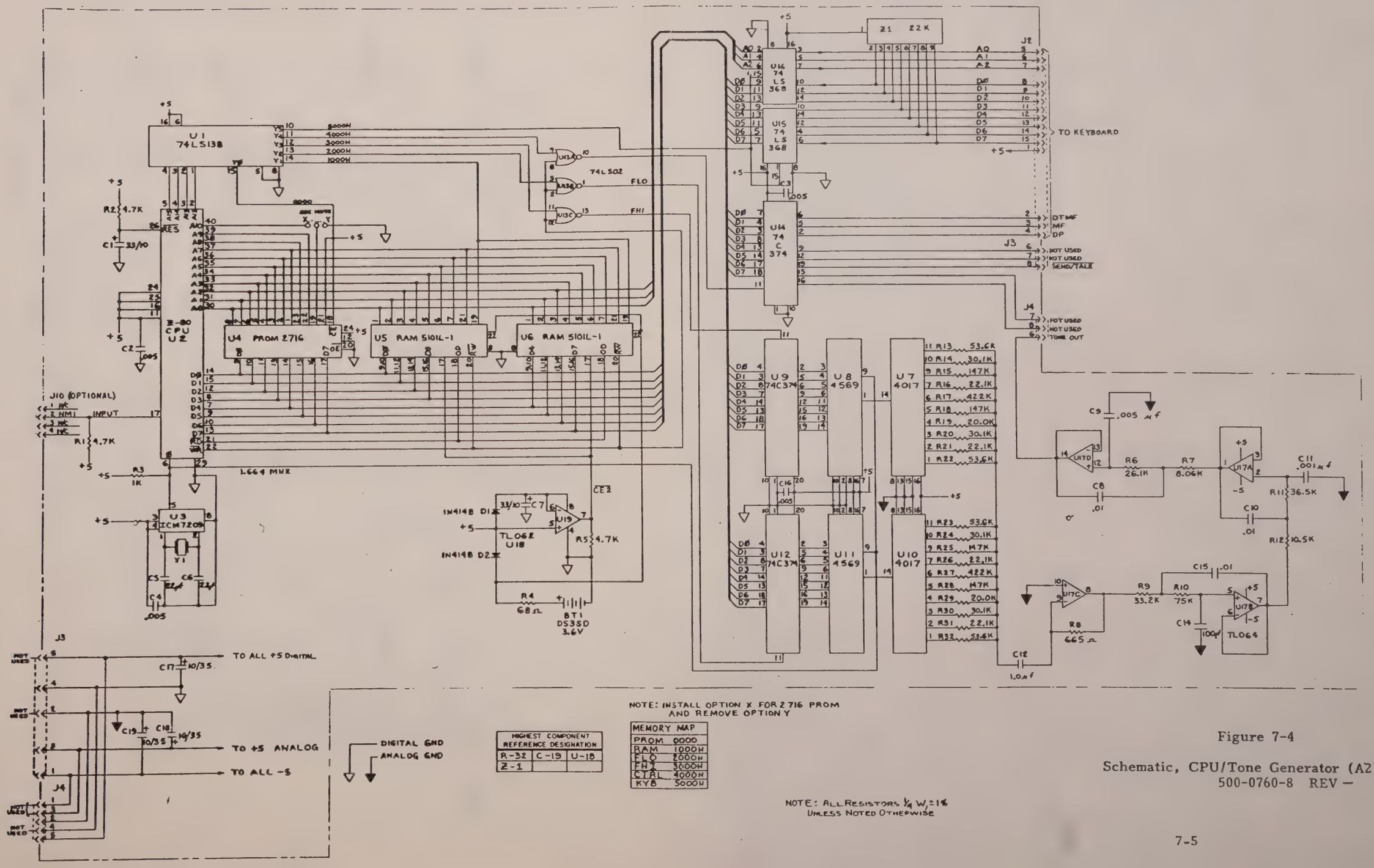


Figure 7-3

P C Assembly, CPU/Tone Generator (A2)

200-1221-7 REV -



NOTE: INSTALL OPTION X FOR 2716 PROM AND REMOVE OPTION Y

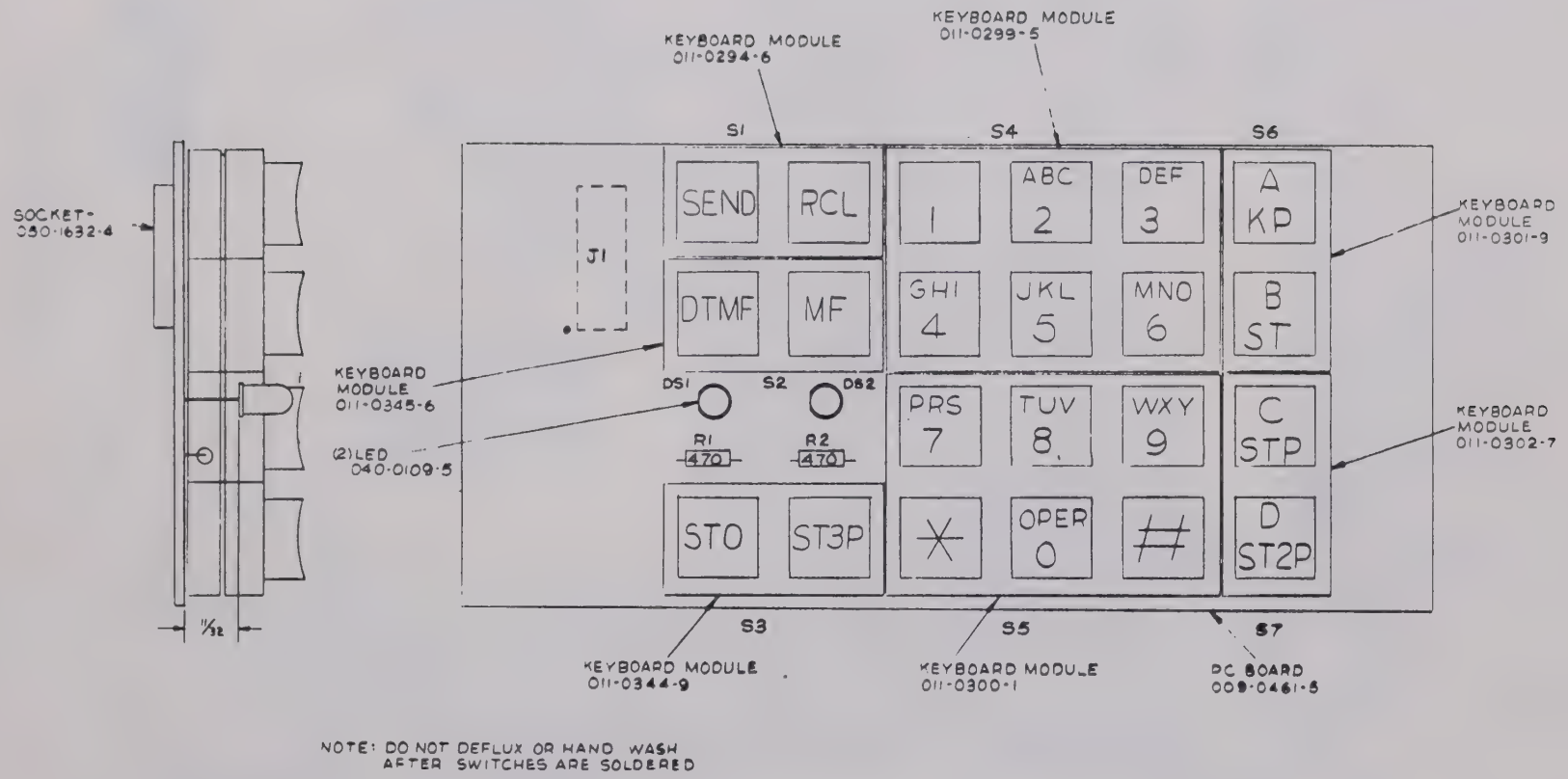
HIGHEST COMPONENT REFERENCE DESIGNATION		
R-32	C-19	U-18
Z-1		

MEMORY MAP	
PROM	0000
RAM	1000H
FLO	2000H
FHI	3000H
CTRL	4000H
KYB	5000H

NOTE: ALL RESISTORS ¼ W, ±1% UNLESS NOTED OTHERWISE

Figure 7-4

Schematic, CPU/Tone Generator (A2)
500-0760-8 REV –



NOTE: DO NOT DEFLUX OR HAND WASH
AFTER SWITCHES ARE SOLDERED

Figure 7-5

P C Assembly, Keyboard (A5)

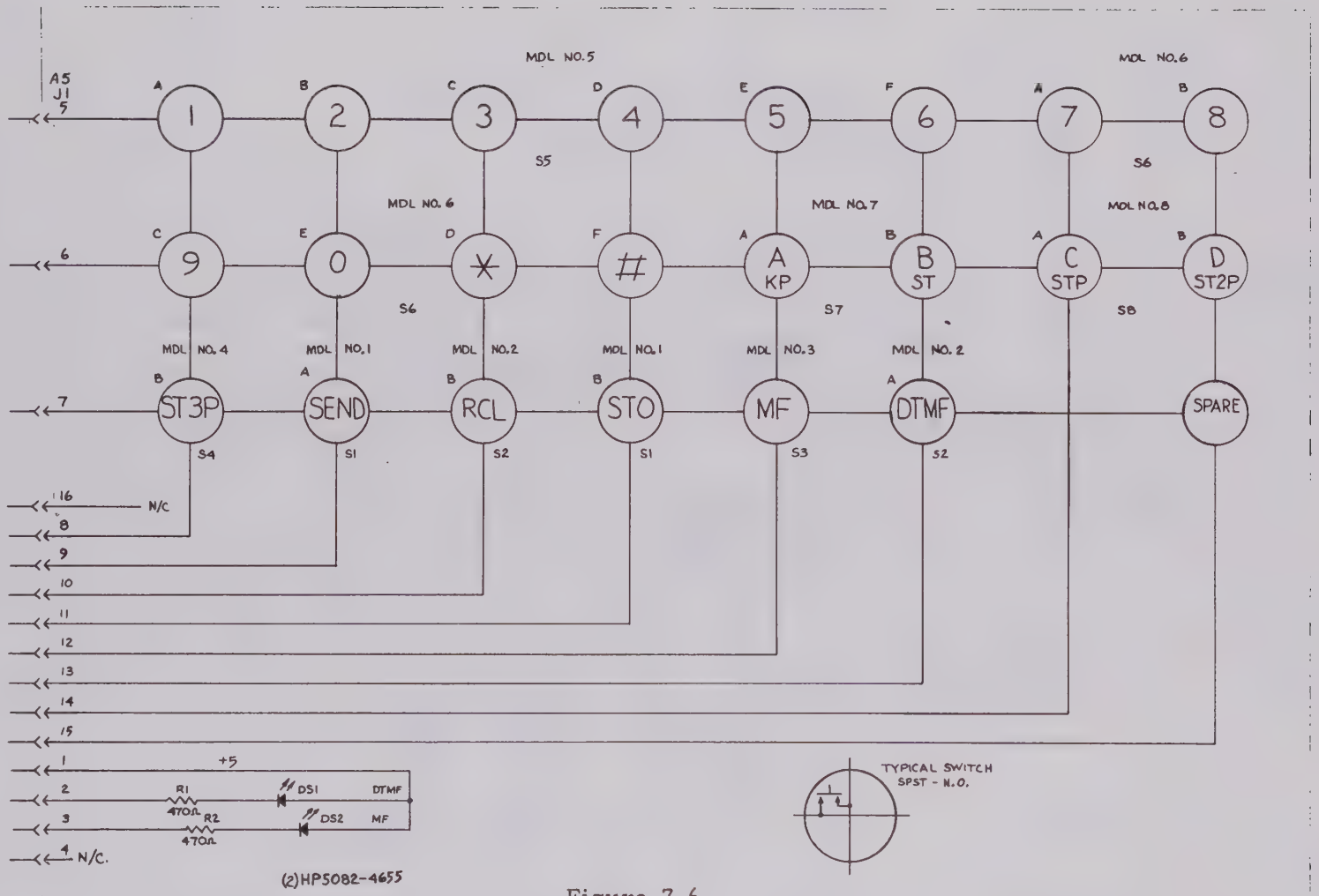


Figure 7-6.

Schematic, Keyboard (A5)

500-0948-9 REV –

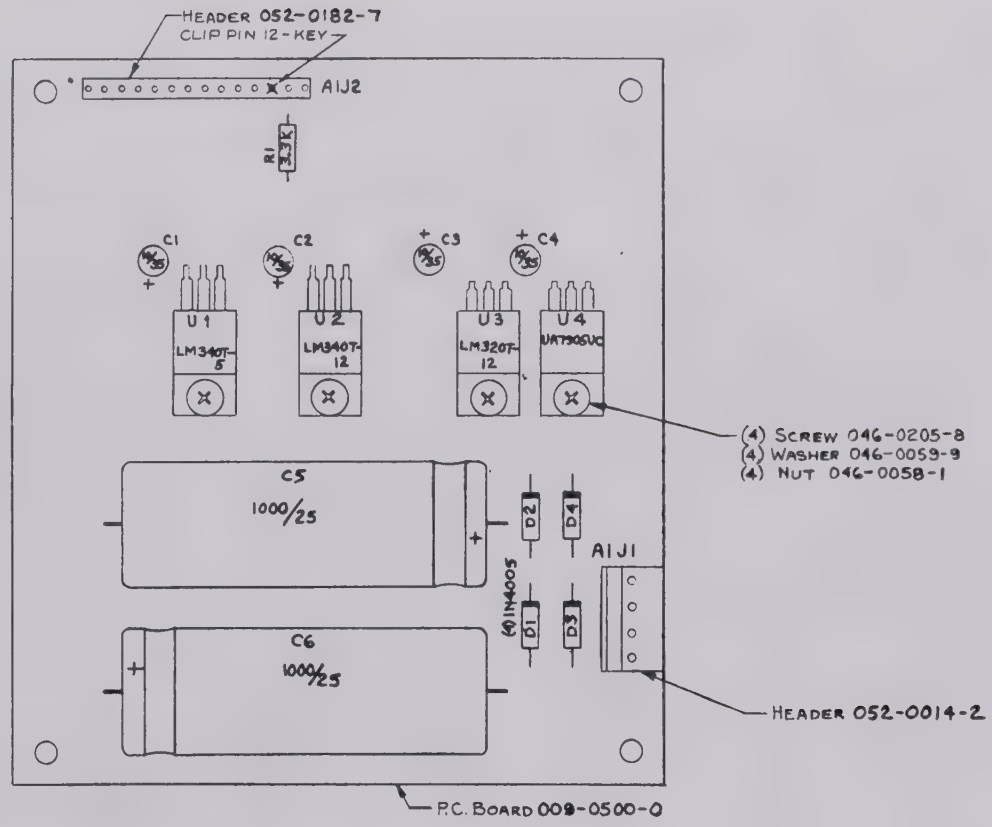


Figure 7-7

P C Assembly, Power Supply (A1)

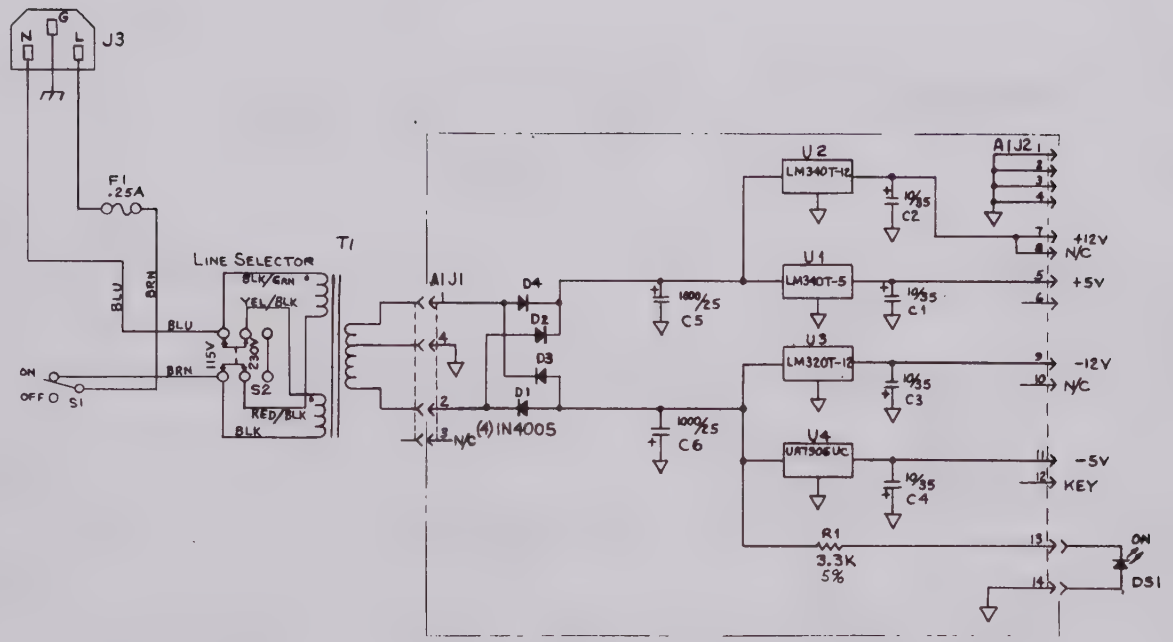


Figure 7-8

Schematic, Power Supply (A1)

500-1004-0 REV A

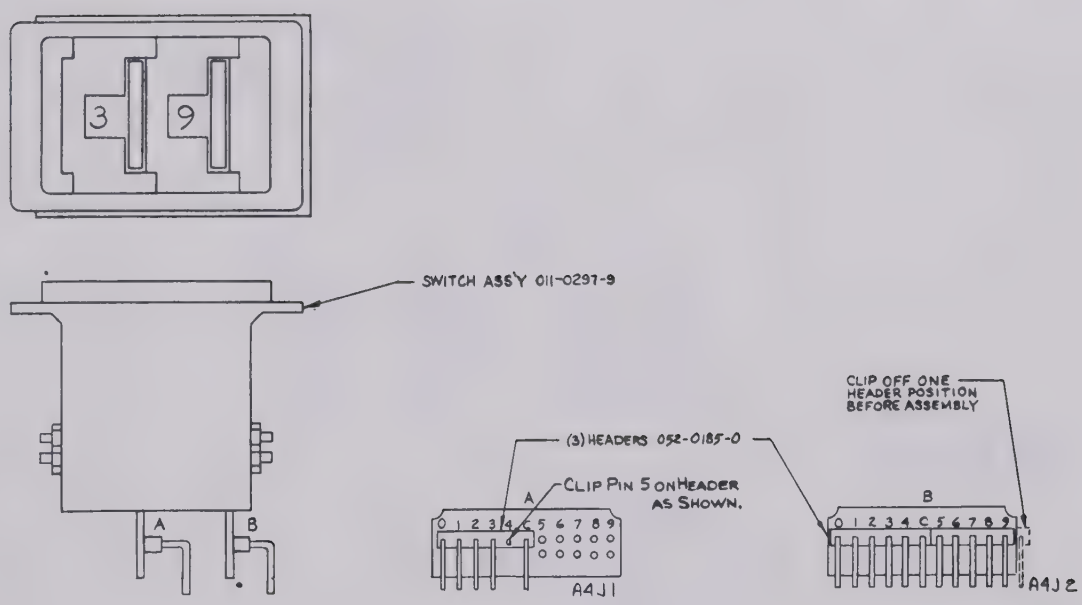


Figure 7-9

Send Level Switch Assembly (A4)

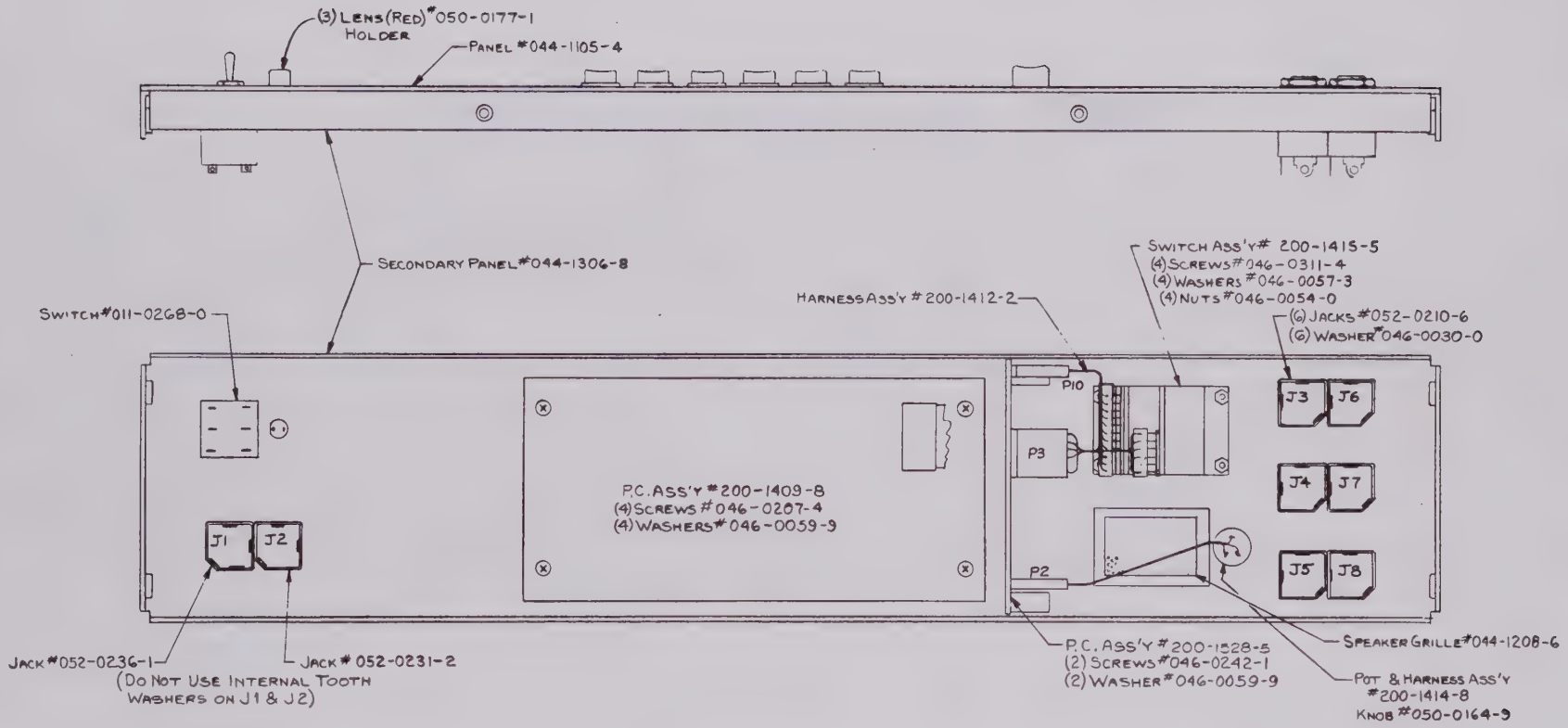
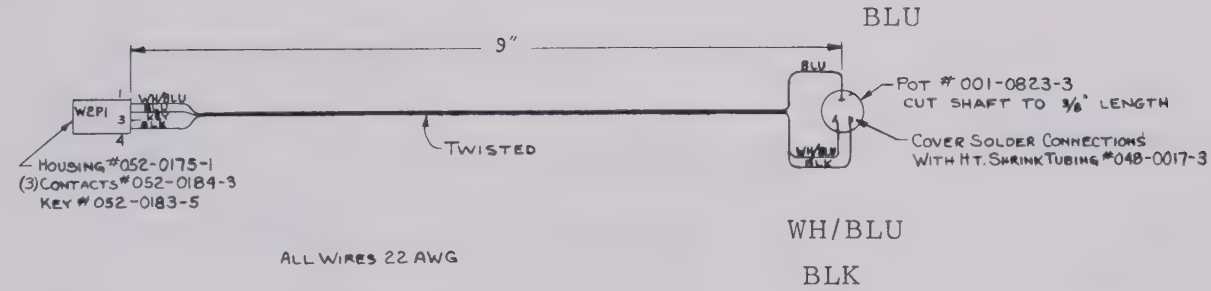


Figure 7-10

Front Panel Assembly (A6)

200-1406-4 REV B



W2P1

Pin

1 - WH/BLU
2 - BLU
3 - KEY
4 - BLK

Figure 7-11

Potentiometer & Harness Assembly (A7)

200-1414-8 REV A

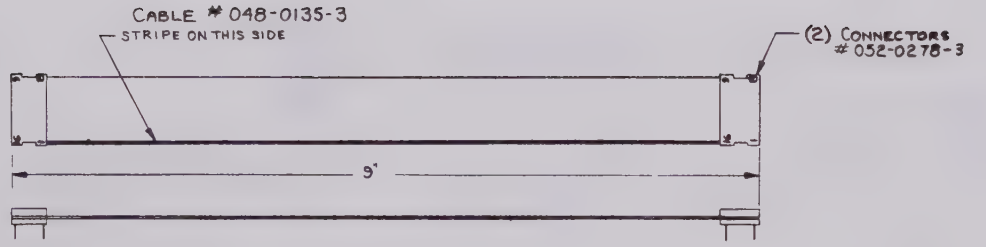
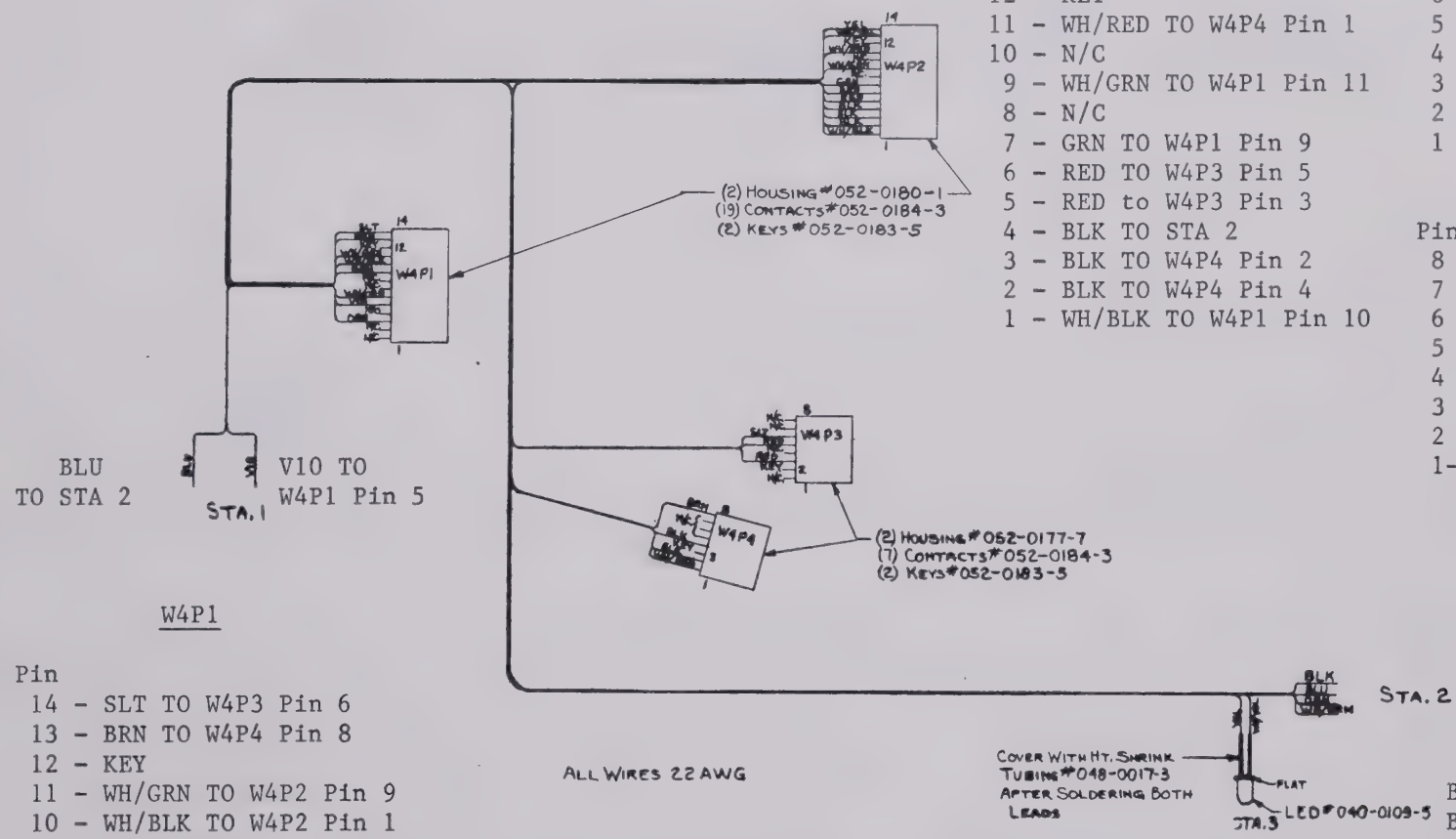


Figure 7-12

Cable Assembly
(Keyboard to CPU/Tone Generator)



W4P2

Pin
- 14 - YEL TO STA 3
- 13 - WH/YEL TO STA 3
- 12 - KEY
- 11 - WH/RED TO W4P4 Pin 1
- 10 - N/C
- 9 - WH/GRN TO W4P1 Pin 11
- 8 - N/C
- 7 - GRN TO W4P1 Pin 9
- 6 - RED TO W4P3 Pin 5
- 5 - RED to W4P3 Pin 3
- 4 - BLK TO STA 2
- 3 - BLK TO W4P4 Pin 2
- 2 - BLK TO W4P4 Pin 4
- 1 - WH/BLK TO W4P1 Pin 10

W4P3

Pin
- 8 - N/C
- 7 - N/C
- 6 - SLT TO W4P1 Pin 1
- 5 - RED TO W4P2 Pin 6
- 4 - N/C
- 3 - RED TO W4P2 Pin 5
- 2 - KEY
- 1 - N/C

W4P4

Pin
- 8 - BRN TO W4P1 Pin 1
- 7 - N/C
- 6 - N/C
- 5 - N/C
- 4 - BLK TO W4P2 Pin 2
- 3 - KEY
- 2 - BLK TO W4P2 Pin 3
- 1-WH/RED TO W4P2 Pin

W4P1

Pin
- 14 - SLT TO W4P3 Pin 6
- 13 - BRN TO W4P4 Pin 8
- 12 - KEY
- 11 - WH/GRN TO W4P2 Pin 9
- 10 - WH/BLK TO W4P2 Pin 1
- 9 - GRN TO W4P2 Pin 7
- 8 - N/C
- 7 - N/C
- 6 - WH/ORN TO STA. 2
- 5 - VIO TO STA. 1
- 4 - N/C
- 3 - ORN TO STA. 2
- 2 - N/C
- 1 - N/C

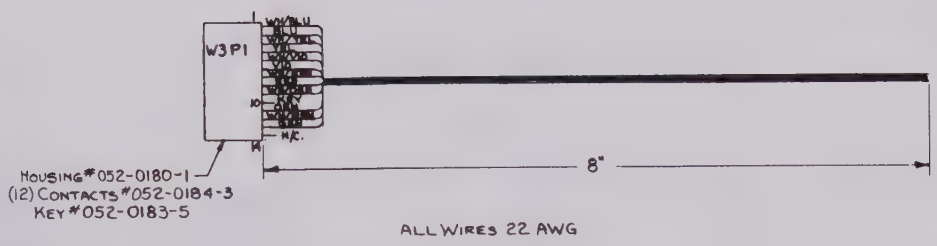
STA. 2
- BLK TO W4P2 Pin 4
- BLU TO STA. 1
- ORN TO W4P1 Pin 3
- WH/ORN TO W4P1 Pin 6

STA. 3

YEL	WH/YEL
TO W4P2	TO W4P2
Pin 14	Pin 13

Figure 7-13

Main Harness Assembly



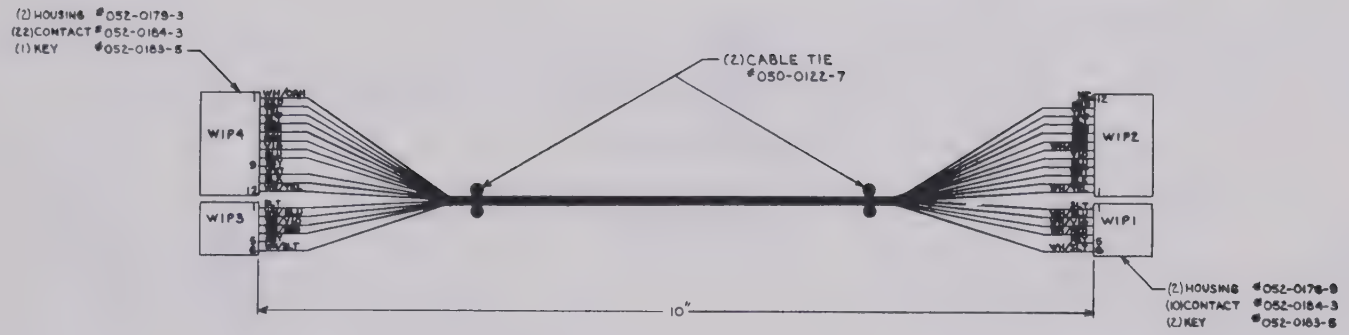
W3P1

Pin
1 - WH/BLU TO J3 T
2 - BLU TO J3 R
3 - WH/YEL TO J4 T
4 - YEL TO J4 R
5 - WH/VIO TO J5 T
6 - VIO TO J5 R
7 - WH/RED TO J6 T
8 - RED TO J6 R
9 - WH/ORN TO J7 T
10 - KEY
11 - ORN TO J7 R
12 - WH/GRN TO J8 T
13 - GRN TO J8 R
14 - N/C

Figure 7-14

Jacks Harness Assembly
(J3-J8 to Line Interface)

200-1411-4 REV —



W1P4

Pin	
1	WH/ORN TO W1P2 Pin 6
2	RED TO W1P2 Pin 11
3	YEL TO W1P2 Pin 10
4	SLT TO W1P2 Pin 9
5	GRN TO W1P2 Pin 8
6	BRN TO W1P2 Pin 7
7	VIO TO W1P2 Pin 5
8	BLU TO W1P2 Pin 4
9	KEY
10	WHT TO W1P2 Pin 3
11	BLK TO W1P2 Pin 2
12	WH/YEL TO W1P2 Pin 1

W1P3

Pin	
1	SLT TO W1P1 Pin 1
2	WH/BLU TO W1P1 Pin 2
3	WH/VIO TO W1P1 Pin 3
4	WH/RED TO W1P1 Pin 4
5	KEY
6	WH/SLT TO W1P1 Pin 6

W1P2

Pin	
12	N/C
11	RED TO W1P4 Pin 2
10	YEL TO W1P4 Pin 3
9	SLT TO W1P4 Pin 4
8	GRN TO W1P4 Pin 5
7	BRN TO W1P4 Pin 6
6	WH/ORN TO W1P4 Pin 1
5	VIO TO W1P4 Pin 7
4	BLU TO W1P4 Pin 8
3	WHT TO W1P4 Pin 10
2	BLK TO W1P4 Pin 11
1	WH/YEL TO W1P4 Pin 12

W1P1

Pin	
1	SLT TO W1P3 Pin 1
2	WH/BLU TO W1P3 Pin 2
3	WH/VIO TO W1P3 Pin 3
4	WH/RED TO W1P3 Pin 4
5	KEY
6	WH/SLT TO W1P3 Pin 6

Figure 7-15

Attenuator Harness Assembly
(attenuator to Line Interface)

200-1412-2 REV A

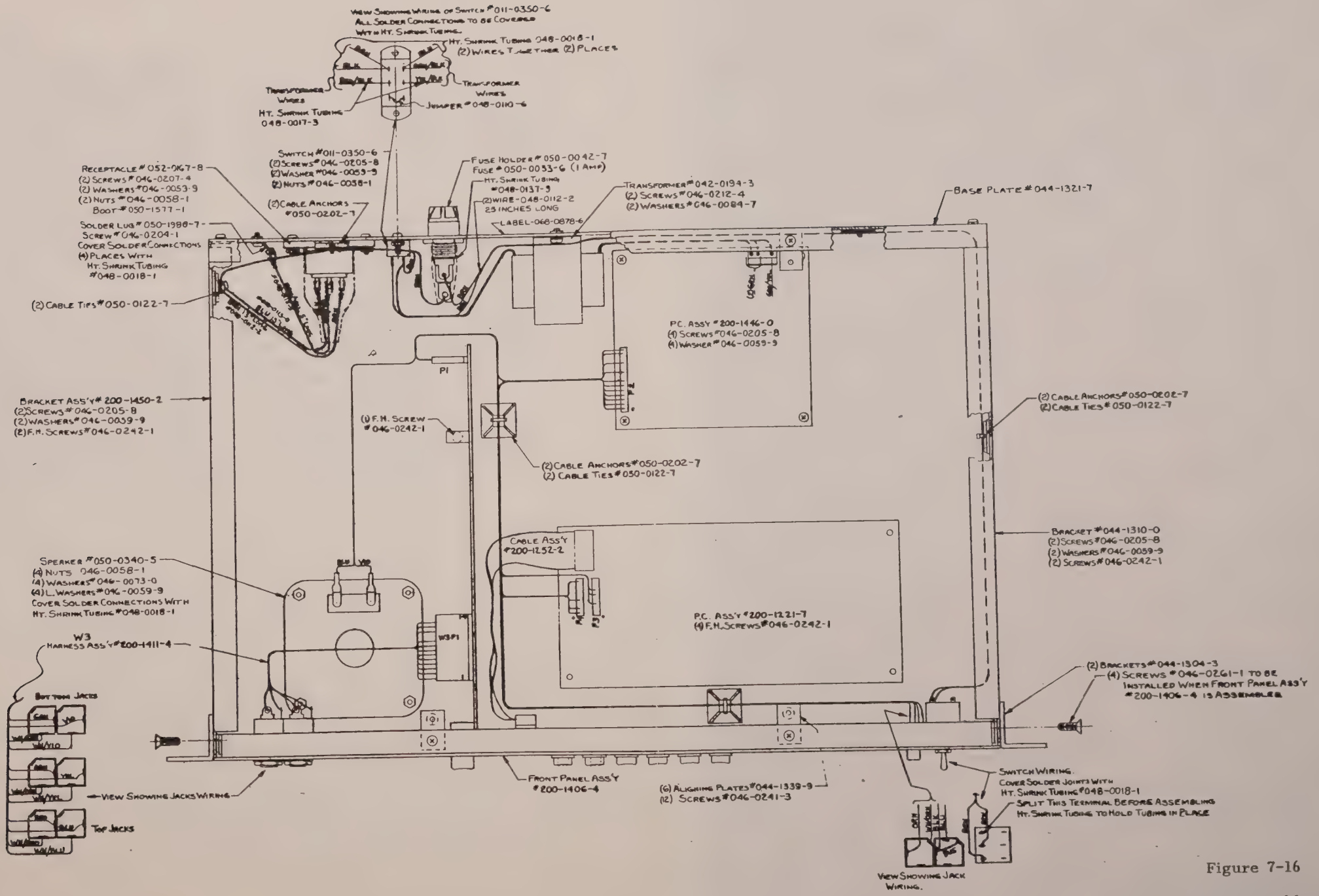


Figure 7-16

Main Chassis Assembly (A8)
200-1407-2 REV B

8.0 PARTS LISTS

8.1 General - This section supplies listings of all components used in the Model T302. The parts lists are identified by an "A" reference designator corresponding to the associated "A" reference designator on the assembly or schematic drawing. The assembly number, located at the top of the parts list, must match the assembly drawing number located in the lower right of the drawing. The "Title or Description" of the assembly is located in the upper left corner of each associated parts list.

8.1.01 Replacement parts may be ordered as indicated in paragraph 8.2 below or may be obtained from local suppliers. When ordering from local suppliers, refer to the column titled "Source Information, Mfr. Name/No., Mfr. Part No.". All components listed with a source of WILCOM must be ordered directly from Wilcom Products, Inc. at the address listed in paragraph 8.2.

8.1.02 Where reference designators have been used on the assembly and schematic drawings they will also be found in the column labeled "Title or Description/Reference Designation". The reference designator will be located directly below the component description.

8.2 Ordering Information - When ordering parts from Wilcom Products, Inc., please use the WILCOM eight digit part number. A twenty-five dollar minimum order is required for billing purposes. Items costing less must be prepaid. Contact our Customer Service Representatives to place an order and/or for current pricing information. They may be reached at the following address;

PLANTRONICS/Wilcom
Box 508, Daniel Webster Highway
Laconia, NH 03247
ATTN: Customer Service/Sales

Phone: (603)524-2622

P A R T S L I S T

TITLE OR DESCRIPTION	PART/DRAWING #	DWG SIZE	DWG REV	P/L REV		
T302 DTMF/MF SENDER 0302	30302012	N	-	-	PREP DGT	12/05/80
					CHECK DGT	12/08/80
					APRVD DJF	12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	IST	WILCOM PART/DWG	DR SIZ	DR REV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	MAIN CHASSIS ASSEMBLY	1	1	20014072	D	B	WILCOM 60000015	0302- -	
000200	TOP COVER	1	1	04413035	C	-	WILCOM 60000015	0302- -	
000300	MS, PHIL, FLAT HD 4-40 X .250	A	1	04602413	R	-	WILCOM 60000015	S F 4-40X.250	
000400	CORD SET, 3 COND (NEW STYLE) BLACK	1	1	04A00074			BELDEN 60101250	17250	
000500	MANUAL, T302 INSTRUCTION	1	1	06804694			WILCOM S&M 60000031	T302 IM I1R0	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION

* PC ASSEMBLY, LINE INTERFACE 0302 *

PART/DRAWING # 20015285 | DWG SIZE C | DWG REV A | P/L REV A

PREP JMT 04/16/81
CHECK JMB 06/05/81
APRVD DJF 07/14/82

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
0001001	PC BOARD, LINE INTERFACE	1	1	00905638	C	-	WILCOM 60000015	0302- -	
0003001	SOLDER MASK FOR 00905638	REF	1	50011048	C	-	WILCOM 60000015	0302- -	
0004001	RES, STBL FILM: 1%, .25W 301 OHM R 19,20	2	1	00110007			TRW/IRC 60100781	T055 301 OHM	
0005001	RES, STBL FILM: 1%, .25W 412 OHM R 44	1	1	00110171			TRW/IRC 60100781	T055 412 OHM	
0006001	RES, STBL FILM: 1%, .25W 453 OHM R 43	1	1	00108845			TRW/IRC 60100781	T055 453 OHM	
0007001	RES, STBL FILM: 1%, .25W 511 OHM R 42	1	1	00108951			TRW/IRC 60100781	T055 511 OHM	
0008001	RES, STBL FILM: 1%, .25W 604 OHM R 13,15,41	3	1	00109066			TRW/IRC 60100781	T055 604 OHM	
0009001	RES, STBL FILM: 1%, .25W 665 OHM R 40	1	1	00110049			TRW/IRC 60100781	T055 665 OHM	
0010001	RES, STBL FILM: 1%, .25W 750 OHM R 39	1	1	00110114			TRW/IRC 60100781	T055 750 OHM	
0011001	RES, STBL FILM: 1%, .25W 866 OHM R 38	1	1	00101253			TRW/IRC 60100781	T055 866 OHM	11638
0012001	RES, STBL FILM: 1%, .25W 976 OHM R 37	1	1	00101295			TRW/IRC 60100781	T055 976 OHM	
0013001	RES, STBL FILM: 1%, .25W 1.07 K R 36	1	1	00109231			TRW/IRC 60100781	T055 1.07 K	
0014001	RES, STBL FILM: 1%, .25W 3.16 K R 35	1	1	00110338			TRW/IRC 60100781	T055 3.16 K	
0015001	RES, STBL FILM: 1%, .25W 3.48 K R 45	1	1	00109314			TRW/IRC 60100781	T055 3.48 K	
0016001	RES, STBL FILM: 1%, .25W 4.99 K R 26	1	1	00101681			TRW/IRC 60100781	T055 4.99 K	11657

P A R T S L I S T

TITLE OR DESCRIPTION: PC ASSEMBLY, LINE INTERFACE 0302

PART/DRAWING #: 20015285 | DWG SIZE: C | DWG REV: A | P/L REV: A

PREP JMT 04/16/81 | CHECK JMB 06/05/81 | APRVD DJF 07/14/82

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR	DR	SZ	RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
001700	RES, STBL FILM: 1%, .25W 6.81 K R 38	1	1	00110726					TRW/IRC 60100781	T055 6.81 K	
001800	RES, STBL FILM: 1%, .25W 10.0 K R 21,22	2	1	00102061					TRW/IRC 60100781	T055 10.0 K	
001900	RES, STBL FILM: 1%, .25W 20.0 K R 3,5,23	3	1	00109603					TRW/IRC 60100781	T055 20.0 K	
002000	RES, STBL FILM: 1%, .25W 21.5 K R 33	1	1	00109629					TRW/IRC 60100781	T055 21.5 K	
002100	RES, STBL FILM: 1%, .25W 49.9 K R 1,2,4,6,7	5	1	00102629					TRW/IRC 60100781	T055 49.9 K	1657
002200	RES, STBL FILM: 1%, .25W 68.1 K R 32	1	1	00110981					TRW/IRC 60100781	T055 68.1 K	
002250	RES, STBL FILM: 1%, .25W 80.6 K R 17	1	1	00108505					TRW/IRC 60100781	T055 80.6 K	
002300	RES, STBL FILM: 1%, .25W 90.9 K R 14	1	1	00111138					TRW/IRC 60100781	T055 90.9 K	
002400	RES, STBL FILM: 1%, .25W 1.00 K R 11,26	2	1	00109157					TRW/IRC 60100781	T055 1.00 K	
002500	RES, STBL FILM: 1%, .25W 2.21 K R 12	1	1	00109223					TRW/IRC 60100781	T055 2.21 K	
002600	RES, STBL FILM: 1%, .25W 15.0 K R 9,10	2	1	00110676					TRW/IRC 60100781	T055 15.0 K	
002700	RES, STBL FILM: 1%, .25W 10.0 K R 30	1	1	00102061					TRW/IRC 60100781	T055 10.0 K	
002800	RES, STBL FILM: 1%, .25W 22.1 K R 24,29	2	1	00109652					TRW/IRC 60100781	T055 22.1 K	
002900	RES, STBL FILM: 1%, .25W 475 K R 18	1	1	00111484					TRW/IRC 60100781	T055 475 K	
003000	RES, STBL FILM: 1%, .25W 100 K R 27,31	2	1	00111153					TRW/IRC 60100781	T055 100 K	

P A R T S L I S T

TITLE OR DESCRIPTION

PC ASSEMBLY, LINE INTERFACE 0302

PART/DRAWING # 20015285

DWG SIZE: C | DWG REV: A | P/L REV: A

PREP JMT 04/16/81
CHECK JMB 06/05/81
APRVD DJF 07/14/82

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUANIST	WILCOM PART/DWG	DR SZ	DR REV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
003100	RES, STRL FILM: 1%, .25W 2.21 MEG R 8	1 1	00115717			TRW/IRC 80100781	T055 2.21 MEG	
003200	POT, TRIM: 3/8 SQ E/A, 1AT 2 K R 25	1 1	00114041			NOTE 80103975	NOT FOR NEW DESIGNS	
003300	POT, TRIM: 3/8 SQ E/A, 18T 20 K R 16	1 1	00114181			NOTE 80103975	NOT FOR NEW DESIGNS	
003400	VARISTOR, SIGNAL: 1 MA @ .58V MIN VR 1	1 1	04000568			VECO 80101425	SV100A	
003500	CAP, DISC: 5%, 500V NPO 33 PF C 4	1 1	00300137			EIA STD 80107608	CC0441C0G330J501	
003600	CAP, RDL MONO:20% 50V Z5U 1.0 UF C 3,7,8,11-13	6 1	00302182			SPRAGUE 80100690	2C37Z5U105M0508	
003700	CAP, TNT ELEC:DIP RAD 10% 35V 10 UF C 1,2	2 1	00301937			ITT SEMI 80101029	TAP-A10K35	
003800	CAP, N-POLAR, RDL: 100V 50 UF C 9,10	2 1	00315085			TRANSPECT 80103304	PC50MP100NPT	
003900	CAP, ALUM ELEC: RDL, 16V 100 UF C 5,6	2 1	00301473			SPRAGUE 80100690	502D107G016CC1C	
004000	TRANSISTOR, NPN AMPLIFIER Q 1	1 1	00500868			MOTO SEMI 80100872	MPS6521	
004100	IC, LINEAR, POWER OP AMP, TAB MOUNT U 2	1 1	00702233			FCHILDSEMI 80100880	UA759U1C	
004200	IC, LINEAR, DUAL BI-FET U 3	1 1	00702043			TI SEMI 80100898	TL082CP	
004300	IC, LINEAR, QUAD BI-FET OP AMP U 1	1 1	00702068			TI SEMI 80100898	TL084CN	
004400	IC, CMOS, QUAD ANALOG TRANS GATE U 4	1 1	00700039			SILICONIX 80100971	DG201CJ	
004500	SWITCH ASSEMBLY, PUSH BUTTON S 1	1 1	01103464	A	-	WILCOM 80000015	0302- -	

P A R T S L I S T

TITLE OR DESCRIPTION: PC ASSEMBLY, LINE INTERFACE 0302

PART/DRAWING #: 20015285 | DWG SIZE: C | DWG REV: A | P/L REV: A

PREP JMT 04/16/81 | CHECK JMB 06/05/81 | APRVD DJF 07/14/82

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUANIST	WILCOM PART/DWG	ORI SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
004600	DIODE, SIGNAL D 1-4,9	5	04000816			GE SEMI 60103405	1N414A	
004700	DIODE, RECTIFIER, 1A D 5-8	4	04000624			MOTO SEMI 60100872	1N4005	
004800	HOLD COIL L 1,2	2	04202115	18	A	WILCOM 60000015	0302- -	
004900	MS, PHIL, PAN HD 4-40 X .250	4	04602041	R	-	WILCOM 60000015	S P 4-40X.250	
005000	LOCKWASHER, HEL SPRING #4	4	04600599	R	-	WILCOM 60000015	W H 4	
005100	NUT, HEX, 1/4 AF 4-40	1	04600581	R	-	WILCOM 60000015	N H 4-40	
005200	SPACER	3	05016787	A	-	WILCOM 60000015	0051-00-139	
005300	HEADER, STR POST, .100 OC 6 POS J 3	1	05200332			AMP 60100062	87344-6	
005400	HEADER, STR POST, .100 OC 12 POS J 10	1	05201819			AMP 60100062	1-87348-2	
005500	HEADER, STR POST, .100 OC 14 POS J 1,7	2	05201827			AMP 60100062	1-87348-4	
005550	HDR, STR POST: .100 OC 4 POS J 2	1	05201652			AMP 60100062	87348-4	
005600	SCKT,IC,LO PROF: GOLD 8 PIN	1	05016274			T I METAL 60106093	C93-08-02	
005700	SCKT,IC,LO PROF: GOLD 14 PIN	1	05016290			T I METAL 60106093	C93-14-02	
005800	SCKT,IC,LO PROF: GOLD 16 PIN	1	05016324			T I METAL 60106093	C93-16-02	
005830	CABLE TIE (1-1/4" MAX DIA BUNDLE)	1	05001243			RAYTH IND 60101573	PLT1.5M	

P A R T S L I S T

TITLE OR DESCRIPTION	PART/DRAWING #	DWG SIZE	DWG REV	P/L REV		
					PREP	JMT 04/16/81
PC ASSEMBLY, LINE INTERFACE 0302	20015285	C	A	A	CHECK	JMB 06/05/81
					APRVD	DJF 07/14/82

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR REV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
005840	RUBBER BUMPER	11		05017355			3M ELEX 60102027	SJ-5012 GREY	
005900	SCHEMATIC, LINE INTERFACE	REF		50011055	C	-	WILCOM 60000015	0302- -	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION: PC ASSEMBLY, CPU/TONE GENERATOR 0302

PART/DRAWING #: 20012217 | DWG SIZE: C | DWG REV: - | P/L REV: A

PREP RLF 09/28/79
CHECK DGT 12/10/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	PC BOARD, CPU/TONE GENERATOR	1	1	00904888	C	A	WILCOM 60000015	0303-	
000200	SOLDER MASK FOR 00904888	REF	1	50007681	C	1-	WILCOM 60000015	0303- -	
000300	RES, ST8L FILM: 1%, .25W 665 OHM R 8	1	1	00110049			TRW/IRC 60100781	T055 665 OHM	
000400	RES, ST8L FILM: 1%, .25W 8.06 K R 7	1	1	00109330			TRW/IRC 60100781	T055 8.06 K	
000500	RES, ST8L FILM: 1%, .25W 10.5 K R 12	1	1	00109504			TRW/IRC 60100781	T055 10.5 K	
000600	RES, ST8L FILM: 1%, .25W 22.1 K R 16,21,26,31	1	4	00109652			TRW/IRC 60100781	T055 22.1 K	
000700	RES, ST8L FILM: 1%, .25W 26.1 K R 6	1	1	00110809			TRW/IRC 60100781	T055 26.1 K	
000800	RES, ST8L FILM: 1%, .25W 30.1 K R 14,20,24,30	1	4	00110866			TRW/IRC 60100781	T055 30.1 K	
000900	RES, ST8L FILM: 1%, .25W 33.2 K R 9	1	1	00110957			TRW/IRC 60100781	T055 33.2 K	
001000	RES, ST8L FILM: 1%, .25W 36.5 K R 11	1	1	00109546			TRW/IRC 60100781	T055 36.5 K	
001100	RES, ST8L FILM: 1%, .25W 53.6 K R 13,22,23,32	1	4	00102657			TRW/IRC 60100781	T055 53.6 K	
001200	RES, ST8L FILM: 1%, .25W 147 K R 15,18,25,28	1	4	00111203			TRW/IRC 60100781	T055 147 K	
001300	RES, ST8L FILM: 1%, .25W 422 K R 17,27	1	2	00111450			TRW/IRC 60100781	T055 422 K	
001400	RES, ST8L FILM: 1%, .25W 68.1 OHM R 4	1	1	00109850			TRW/IRC 60100781	T055 68.1 OHM	
001500	RES, ST8L FILM: 1%, .25W 1.00 K R 3	1	1	00109157			TRW/IRC 60100781	T055 1.00 K	

P A R T S L I S T

TITLE OR DESCRIPTION: PC ASSEMBLY, CPU/TONE GENERATOR 0302

PART/DRAWING #: 20012217 | DWG SIZE: C | DWG REV: - | P/L REV: A

PREP RLF 09/28/79
CHECK DGT 12/10/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
001600	RES, STBL FILM: 1%, .25W 4.75 K R 1,2,5	3	I	00110548			TRW/IRC 60100781	T055 4.75 K	
001700	RES, STBL FILM: 1%, .25W 20.0 K R 19,29	2	I	00109603			TRW/IRC 60100781	T055 20.0 K	
001800	RES, STBL FILM: 1%, .25W 75.0 K R 10	1	I	00111096			TRW/IRC 60100781	T055 75.0 K	
001900	CAP, DISC: 5%, 500V N750 22 PF C 5,6	2	I	00300111			TUSONIX 60107364	831-000-U2J0-220J	
002000	CAP, TNT ELEC: ROL, 20% 10V 33 UF C 1,7	2	I	00301770			MALLORY 60101813	TIM336M010P0Y	
002100	CAP, TNT ELEC:DIP RAD 10% 35V 10 UF C 17-19	3	I	00301937			ITT SEMI 60101029	TAP-A10K35	
002200	CAP, AXL PPA: 1% 400V .005 UF C 9	1	I	00304981			F-DYNE 60100328	PPA-11-.005-400-	11491
002250	CAP, DISC: +80-20%, 100V 5000 PF C 2-4,6	4	I	00300418			TUSONIX 60107364	835-000-X5V0-502K	11491
002300	CAP, AXL PE: 2% 100V .01 UF C 8,10,15	3	I	00302588			F-DYNE 60100324	PE11-.01-100-2	
002400	CAP, AXL PE: 2% 100V 1000 PF C 11	1	I	00315093			F-DYNE 60100324	PE11-.001-100-2	
002500	CAP, MICA DM15: 1% 500V 100 PF C 14	1	I	00313544			CDE 60101615	CD15FD101F03	
002600	CAP, RDL MONO:20% 50V Z5U 1.0 UF C 12	1	I	00302182			SPRAGUE 60100690	2C372SU105M050B	
002700	DIODE, SIGNAL D 1,2	2	I	04000816			GE SEMI 60103405	1N4148	
002800	IC, PROGRAMED PROM, U4, 0000-07FF U 4	1	I	00706473	A	-	WILCOM 60000015	0303- -	
002900	IC, LSTTL, 1 OF 8 DECODER U 1	1	I	00701094			NAT'L SEMI 60100963	DM74LS138N	

P A R T S L I S T

TITLE OR DESCRIPTION

PC ASSEMBLY, CPU/TONE GENERATOR 0302

PART/DRAWING # 20012217

DWG SIZE: C | DWG REV: - | P/L REV: A

PREP RLF 09/28/79
CHECK DGT 12/10/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION		QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
0030001	IC, UPROC, 8 BIT, NMOS U 2		1	1	00705830 60104742			ZILOG	Z80-CPU (PLASTIC)	
0031001	IC, CMOS, CRYSTAL CONT FREQ GEN. U 3		1	1	00704619 60101003			INTERSIL	ICM7209IPA	
0032001	IC, MEM,256X4 STATIC CMOS RAM,450NS U 5,6		2	1	00705848 60100997			INTEL	P5101L-1	
0033001	IC, CMOS, DECADE COUNTER U 7,10		2	1	00701201 60101144			RCA SEMI	CD4017BE	
0034001	IC, CMOS, DUAL PROG. BCD/BI CNTR U 8,11		2	1	00705087 60100872			MOTO SEMI	MC145698CP	
0035001	IC, CMOS, OCTAL D-TYPE FLIP-FLOP U 9,12,14		3	1	00706044 60100963			NAT'L SEMI	MM74C374N	
0036001	IC, LSTTL, TRI STATE HEX INV. BUF U 15,16		2	1	00706051 60100872			MOTO SEMI	SN74LS368AN	
0037001	IC, LIN,DUAL LO PWR BI-FET OP AMP U 18		1	1	00702050 60100898			TI SEMI	TL062CP	
0038001	IC,LIN,LO PWR, JFET-INPUT,OP AMP U 17		1	1	00705772 60100898			TI SEMI	TL064ACN	
0039001	IC, CMOS, QUAD 2 INPUT NOR U 13		1	1	00706036 60100963			NAT'L SEMI	MM74C02N	
0040001	CRYSTAL Y 1	1.664 MHZ	1	1	05400A33 60000015	A	-	WILCOM	0303- -	
0041001	RESISTOR NET, 10 PIN SIP, 9 BUSSED 2% Z 1	2.2 K	1	1	05400452 60101649			BOURNS	4310R-101-222	
0042001	BATTERY, NIC-CAD: 3.6 V, 65 MAH BT 1		1	1	05003090 60103827			GE BATT	D33SD	
0043001	STDOFF,SWAGE: 1/4 RND,3/8 L 4-40		4	1	05003728 60100039			AMATOM	9535R-A-0440-0	
0044001	HEADER, STR POST, .100 OC 8 POS		2	1	05200290 60100062			AMP	87348-8	

P A R T S L I S T

TITLE OR DESCRIPTION

PC ASSEMBLY, CPU/TONE GENERATOR 0302

PART/DRAWING # 20012217

DWG SIZE	C
DWG REV	-
P/L REV	A
PREP	RLF 09/28/79
CHECK	DGT 12/10/80
APRVD	DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
004500	COMP MT: VERT (1/4W RES) 4 POS	4	1	05020110			ROBISON 60100625	RC-CS250312-4A	
004600	COMP MT: VERT (1/4W RES) 2 POS	2	1	05020094			ROBISON 60100625	RC-CS250312-2A	
004700	SCKT,IC,LO PROF: GOLD 16 PIN	3	1	05016324			T I METAL 60106093	C93-16-02	
004800	SOCKET, IC, LO PROF: GOLD 22 PIN	2	1	05003082			T I METAL 60106093	C93-22-02	
004900	SCKT,IC,LO PROF: GOLD 24 PIN	1	1	05016407			T I METAL 60106093	C93-24-02	
005000	SCKT,IC,LO PROF: GOLD 40 PIN	1	1	05016365			T I METAL 60106093	C93-40-02	
005100	BUS WIRE, 22AWG	A/R		04800694			BELDEN 60101250	8021	
005200	TUBING, NON-SHRINK, TFLN 22AWG CLR	A/R		04800777			ALPHA 60101284	TFT-200-22 NATURAL	
005300	SCHEMATIC, CPU/TONE GENERATOR	REF		50007608	D	-	WILCOM 60000015	0302- -	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION: PC ASSEMBLY, KEYBOARD 0302

PART/DRAWING #: 20014098 | DWG SIZE: C | DWG REV: - | P/L REV: - | PREP SPT 12/01/80 | CHECK DGT 12/08/80 | APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUANIST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	PC BOARD, KEYBOARD	1 1	00904615	C	1-	WILCOM 60000015	0302	
000175	SOLDER MASK FOR 00904615	REF 1	50009497	C	1-	WILCOM 60000015	0302- -	
000200	RES, STBL FILM: 1%, .25W 475 OHM R 1,2	2 1	00108894		1	TRW/IRC 60100781	T055 475 OHM	
000300	KEYBOARD MODULE S 1	1 1	01102946	B	1-	WILCOM 60000015	0303- -	
000400	KEYBOARD MODULE S 2	1 1	01103456	B	1-	WILCOM 60000015	0302- -	
000500	KEYBOARD MODULE S 3	1 1	01103449	B	1-	WILCOM 60000015	0302- -	
000600	KEYBOARD MODULE S 4	1 1	01102995	B	1-	WILCOM 60000015	0303- -	
000700	KEYBOARD MODULE S 5	1 1	01103001	B	1-	WILCOM 60000015	0303- -	
000800	KEYBOARD MODULE S 6	1 1	01103019	B	1-	WILCOM 60000015	0303- -	
000900	KEYBOARD MODULE S 7	1 1	01103027	B	1-	WILCOM 60000015	0303- -	
001000	LED, RED DIF, HI INTEN T 1-3/4 CYL DS 1,2	2 1	04001095		1	H.P. 60100393	5082 4655	
001100	SCKT,IC,LO PROF: GOLD 16 PIN J 1	1 1	05016324		1	T I METAL 60106093	C93-16-02	
001200	SCHEMATIC, KEYBOARD	REF 1	50009489	C	1-	WILCOM 60000015	0302- -	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION

PC ASSEMBLY, POWER SUPPLY 0302

PART/DRAWING # 20014460 | DWG SIZE C | DWG REV A | P/L REV A

PREP SPT 12/02/80
CHECK DGT 12/05/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DRSZ	DRRV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	PC BOARD, POWER SUPPLY	1	1	00905000	C	-	WILCOM 60000015	0306- -	11491
000200	SOLDER MASK FOR 00905000	REF	1	50008390	C	-	WILCOM 60000015	0306- -	
000300	RES, STBL FILM: 1%, .25W 3.32 K R 1	1	1	00110379	1	1	TRW/IRC 60100781	T055 3.32 K	
000400	CAP, TNT ELEC:DIP RAD 10% 35V 10 UF C 1-4	4	1	00301937	1	1	ITT SEMI 60101029	TAP-A10K35	
000500	CAP, ALUM ELECT: AXIAL, 25V 1000 UF C 5,6	2	1	00300988	1	1	SPRAGUE 60100690	39D108G025GL4	
000600	DIODE, RECTIFIER, 1A D 1-4	4	1	04000824	1	1	MOTO SEMI 60100872	1N4005	
000700	IC, LINEAR, NEG 12-VOLT REG, TO-220 U 3	1	1	00701599	1	1	NAT'L SEMI 60100963	LM320T-12	
000800	IC, LINEAR, POS 5-VOLT, TO-220 U 1	1	1	00706291	1	1	NAT'L SEMI 60100963	LM340T-5	
000900	IC, LINEAR, +12V +/-5% REG, TO-220 U 2	1	1	00703157	1	1	NAT'L SEMI 60100963	LM340T-12	
001000	IC, LINEAR, -5V REG, TO-220 U 4	1	1	00705152	1	1	FCHILDSEMI 60100880	UA7905UC	
001100	MS, PHIL, PAN HD 4-40 X .312	4	1	04602058	R	-	WILCOM 60000015	S P 4-40X.312	
001200	LOCKWASHER, HEL SPRING #4	4	1	04600599	R	-	WILCOM 60000015	W H 4	
001300	NUT, HEX, 1/4 AF 4-40	4	1	04600581	R	-	WILCOM 60000015	N H 4-40	
001400	HDR,STR POST: .156 OC W/LOCK 4 POS J 1	1	1	05200142	1	1	MOLEX 60101847	09-65-1041	
001500	HEADER, STR POST, .100 OC 14 POS J 2	1	1	05201827	1	1	AMP 60100062	1-87348-4	

P A R T S L I S T

TITLE OR DESCRIPTION	PART/DRAWING #	DWG SIZE	DWG REV	P/L REV		
					PREP	SPT 12/02/80
PC ASSEMBLY, POWER SUPPLY	20014460				CHECK	OGT 12/05/80
0302		C	A	A	APRVD	DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUANIST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
001600	SCHEMATIC, POWER SUPPLY	REF	50010040	B	A	WILCOM A0000015	0302- -	11657

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION	PART/DRAWING #	DWG SIZE	DWG REV	P/L REV		
SEND LEVEL SWITCH ASSEMBLY 0302	20014155	B	-	-	PREP SPT	12/01/80
					CHECK DGT	12/05/80
					APRVD DJF	12/10/80

LINE NUMBER	REFERENCE DESIGNATION	TITLE OR DESCRIPTION	QUAN	ST	WILCOM PART/DWG	ORI SZ	ORI RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100		THUMBWHEEL SWITCH ASSEMBLY	1	1	01102979	A	-	WILCOM 60000015	0303- -	
000200	J 1,2	HDR, R.A.; .100 OC 6 POS	3	1	05201850			MOLEX 60101847	22-05-2061	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION: FRONT PANEL ASSEMBLY 0302 | PART/DRAWING #: 20014064 | DWG SIZE: C | DWG REV: B | P/L REV: A | PREP SPT 12/01/80 | CHECK DGT 12/05/80 | APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	PANEL	1		04411054	C	-	WILCOM 60000015	0302	
000130	MADE-FROM	****							
000140	PANEL DETAIL-FRONT	REF		04413050	C	-	WILCOM 60000015	0302- -	
000150	PANEL LAYOUT	REF		50006469	C	A	WILCOM 60000015	0302- -	
000200	PANEL DETAIL, SECONDARY	1		04413068	C	-	WILCOM 60000015	0302- -	
000300	PC ASSEMBLY, LINE INTERFACE	1		20015285	C	A	WILCOM 60000015	0302- -	11428
000400	PC ASSEMBLY, KEYBOARD	1		20014098	C	-	WILCOM 60000015	0302- -	
000500	HARNESS ASSEMBLY, ATTENUATOR	1		20014122	B	A	WILCOM 60000015	0302- -	
000600	SEND LEVEL SWITCH ASSEMBLY	1		20014155	B	-	WILCOM 60000015	0302- -	
000700	POT. & HARNESS ASSEMBLY	1		20014148	B	A	WILCOM 60000015	0302- -	
000800	SW, TOG, MINIATURE PWR, DPDT	1		01102680			C&K 60101128	9201SM3ZQE	
000900	SPEAKER GRILLE	1		04412086	A	-	WILCOM 60000015	0303- -	
001000	KNOB, BLK: 1/2 DIA 1/8 BUSH	1		05001649			BUCKEYE 60100153	PS-50-1-8LK	
001100	JACK, PH: 3 COND (T CLSD/R OPN CKTS) J 1	1		05202361			SWCRAFT 60100732	N-1138	
001200	JACK, PH:3 COND(DBL OPN,SLDR TERM) J 2	1		05202312			SWCRAFT 60100732	N-112-8	

P A R T S L I S T

TITLE OR DESCRIPTION

* FRONT PANEL ASSEMBLY 0302 *

PART/DRAWING # 20014064 | DWG SIZE C | DWG REV B | P/L REV A

PREP SPT 12/01/80
CHECK DGT 12/05/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
001300	JACK, PH:3 COND(ORL OPN,SLDR TERM) J 3-8	6	1	05202106			SWCRAFT 60100732	M-1128	
001350	LED HOLDER, RED	3	1	05001771			VISUALCOMM 60101854	CLF280RTP	11657
001400	MS, PHIL, FLAT HD 2-56 X .375	4	1	04603110	R	-	WILCOM 60000015	S F 2-56X.375	
001500	MS, PHIL, PAN HD 4-40 X .437	4	1	04602074	R	-	WILCOM 60000015	S P 4-40X.437	11657
001600	MS, PHIL, FLAT HD 4-40 X .312	2	1	04602421	R	-	WILCOM 60000015	S F 4-40X.312	
001700	LOCKWASHER, HEL SPRING #2	4	1	04600573	R	-	WILCOM 60000015	W H 2	
001720	LOCKWASHER, HEL SPRING #4	2	1	04600599	R	-	WILCOM 60000015	W H 4	11657
001730	LOCKWASHER, INT TOOTH 3/8 ID	6	1	04600300	R	-	WILCOM 60000015	W I 3/8	11657
001800	LOCKWASHER, HEL SPRING #4	4	1	04600599	R	-	WILCOM 60000015	W H 4	
001900	NUT, HEX, 3/16 AF 2-56	4	1	04600540	R	-	WILCOM 60000015	N H 2-56	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION

* POT. & HARNESS ASSEMBLY 0302 *

PART/DRAWING # 20014148

DWG SIZE: B | DWG REV: A | P/L REV: - | PREP SPT 12/01/80 | CHECK DGT 12/05/80 | APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	IST	WILCOM PART/DWG	DR SIZ	DR REV	SOURCE INFORMATION: MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	POT, CTRL: 1/2 DIA, 1T 10 K	1	1	00108233			A-B 60101433	WA2G056S103UA	
000200	HOUSING, .100 OC LOCKING 4 POS	1	1	05201751			AMP 60100062	1-87175-0	
000300	CONTACT, LOCKING, 22-26 AWG	3	1	05201843			AMP 60100062	87124-2	
000400	KEYING DEVICE	1	1	05201835			AMP 60100062	87179-1	
000500	WIRE, HOOKUP 22AWG (7X30) BLK	A/R	1	04800462			BELDEN 60101250	8503 BLK	
000600	WIRE, HOOKUP 22AWG (7X30) BLU	A/R	1	04800439			BELDEN 60101250	8503 BLU	
000700	WIRE, HOOKUP 22AWG (7X30) WHT/BLU	A/R	1	04800397			BELDEN 60101250	8503 WHT/BLU	
000800	TUBING, HEAT SHRINK, 1/8 DIA BLK	A/R	1	04800173			ALPHA 60101284	FIT 221-1/8" BLK	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION

* CABLE ASSEMBLY 0303 *

PART/DRAWING # 20012522

DWG SIZE: B | DWG REV: - | P/L REV: - | PREP | SPT | CHECK | APRVD | 03/20/80 | / / | / /

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	CABLE, RIBBON: 28AWG (7X36) 16 COND	1		04801353			3M ELEX 60102027	3365/16	
000200	MASS TERM DIP CONNECTOR 16 POS	2		05202783			3M ELEX 60102027	3416-0000	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION

* HARNESS ASSEMBLY, MAIN 0302 *

PART/DRAWING #	20014130
DWG SIZE	C
DWG REV	A
P/L REV	-
PREP SPT	12/02/80
CHECK DGT	12/08/80
APRVD DJF	12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	IST	WILCOM PART/DWG	DR SIZ	DR REV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	HOUSING, .100 OC LOCKING 8 POS P 3,4	2	1	05201777			AMP 60100062	1-87175-7	
000200	HOUSING, .100 OC LOCKING 14 POS P 1,2	2	1	05201801			AMP 60100062	2-87175-9	
000300	CONTACT, LOCKING, 22-26 AWG	26	1	05201843			AMP 60100062	87124-2	
000400	KEYING DEVICE	4	1	05201835			AMP 60100062	87179-1	
000500	LED, RED DIF, HI INTEN T 1-3/4 CYL	1	1	04001095			H.P. 60100393	5082 4655	
000600	WIRE, HOOKUP 22AWG (7X30) BLK	A/R	1	04800462			BELDEN 60101250	8503 BLK	
000700	WIRE, HOOKUP 22AWG (7X30) BRN	A/R	1	04800348			BELDEN 60101250	8503 BRN	
000800	WIRE, HOOKUP 22AWG (7X30) RED	A/R	1	04800363			BELDEN 60101250	8503 RED	
000900	WIRE, HOOKUP 22AWG (7X30) ORN	A/R	1	04800413			BELDEN 60101250	8503 ORN	
000950	WIRE, HOOKUP 22AWG (7X30) YEL	A/R	1	04800322			BELDEN 60101250	8503 YEL	
001000	WIRE, HOOKUP 22AWG (7X30) GRN	A/R	1	04800405			BELDEN 60101250	8503 GRN	
001100	WIRE, HOOKUP 22AWG (7X30) BLU	A/R	1	04800439			BELDEN 60101250	8503 BLU	
001200	WIRE, HOOKUP 22AWG (7X30) VIO	A/R	1	04800314			BELDEN 60101250	8503 VIO	
001300	WIRE, HOOKUP 22AWG (7X30) SLT	A/R	1	04800447			BELDEN 60101250	8503 SLT	
001400	WIRE, HOOKUP 22AWG (7X30) WHT/BLK	A/R	1	04800389			BELDEN 60101250	8503 WHT/BLK	

P A R T S L I S T

TITLE OR DESCRIPTION	PART/DRAWING #	DWG SIZE	DWG REV	P/L REV		
					PREP SPT	12/02/80
* HARNESS ASSEMBLY, MAIN 0302 *	20014130	C	A	-	CHECK DGT	12/08/80
					APRVD DJF	12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
001500	WIRE, HOOKUP 22AWG (7X30) WHT/RED	A/R		04800496			BELDEN 60101250	8503 WHT/RED	
001600	WIRE, HOOKUP 22AWG (7X30) WHT/ORN	A/R		04800371			BELDEN 60101250	8503 WHT/ORN	
001700	WIRE, HOOKUP 22AWG (7X30) WHT/YEL	A/R		04800470			BELDEN 60101250	8503 WHT/YEL	
001800	WIRE, HOOKUP 22AWG (7X30) WHT/GRN	A/R		04800454			BELDEN 60101250	8503 WHT/GRN	
001900	TUBING, HEAT SHRINK, 1/8 DIA BLK	A/R		04800173			ALPHA 60101284	FIT 221-1/8" BLK	
002000	HARNESS SHEET (MAIN)	REF		50010289	A	A	WILCOM 60000015	0302- -	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION: HARNESS ASSEMBLY, JACKS 0302

PART/DRAWING #: 20014114 | DWG SIZE: B | DWG REV: - | P/L REV: -

PREP SPT 12/02/80
CHECK DGT 12/05/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION REFERENCE DESIGNATION	QUANT	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	HOUSING, .100 OC LOCKING 14 POS	11		05201801			AMP 60100062	2-87175-9	
000200	CONTACT, LOCKING, 22-26 AWG	121		05201843			AMP 60100062	87124-2	
000300	KEYING DEVICE	11		05201835			AMP 60100062	87179-1	
000400	WIRE, HOOKUP 22AWG (7X30) RED	A/R		04800363			BELDEN 60101250	8503 RED	
000500	WIRE, HOOKUP 22AWG (7X30) ORN	A/R		04800413			BELDEN 60101250	8503 ORN	
000600	WIRE, HOOKUP 22AWG (7X30) YEL	A/R		04800322			BELDEN 60101250	8503 YEL	
000700	WIRE, HOOKUP 22AWG (7X30) GRN	A/R		04800405			BELDEN 60101250	8503 GRN	
000800	WIRE, HOOKUP 22AWG (7X30) BLU	A/R		04800439			BELDEN 60101250	8503 BLU	
000900	WIRE, HOOKUP 22AWG (7X30) VIO	A/R		04800314			BELDEN 60101250	8503 VIO	
001000	WIRE, HOOKUP 22AWG (7X30) WHT/RED	A/R		04800496			BELDEN 60101250	8503 WHT/RED	
001100	WIRE, HOOKUP 22AWG (7X30) WHT/ORN	A/R		04800371			BELDEN 60101250	8503 WHT/ORN	
001200	WIRE, HOOKUP 22AWG (7X30) WHT/YEL	A/R		04800470			BELDEN 60101250	8503 WHT/YEL	
001300	WIRE, HOOKUP 22AWG (7X30) WHT/GRN	A/R		04800454			BELDEN 60101250	8503 WHT/GRN	
001400	WIRE, HOOKUP 22AWG (7X30) WHT/BLU	A/R		04800397			BELDEN 60101250	8503 WHT/BLU	
001500	WIRE, HOOKUP 22AWG (7X30) WHT/VIO	A/R		04800330			BELDEN 60101250	8503 WHT/VIO	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION	PART/DRAWING #	DWG SIZE	DWG REV	P/L REV		
HARNESS ASSEMBLY, ATTENUATOR 0302	20014122	B	A	A	PREP SPT	12/02/80
					CHECK DGT	12/08/80
					APRVD DJF	12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	IST	AILCOM PART/DWG	DRI SZ	DRI RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	HOUSING, .100 OC LOCKING 6 POS	21		05201769			AMP 60100062	1-87175-3	
000200	HOUSING, .100 OC LOCKING 12 POS	21		05201793			AMP 60100062	2-87175-5	
000300	CONTACT, LOCKING, 22-24 AWG	321		05201843			AMP 60100062	87124-2	
000400	KEYING DEVICE	31		05201835			AMP 60100062	87179-1	
000500	WIRE, HOOKUP 22AWG (7X30) BLK	A/R		04800462			BELDEN 60101250	8503 BLK	
000600	WIRE, HOOKUP 22AWG (7X30) BRN	A/R		04800348			BELDEN 60101250	8503 BRN	
000700	WIRE, HOOKUP 22AWG (7X30) RED	A/R		04800363			BELDEN 60101250	8503 RED	
000800	WIRE, HOOKUP 22AWG (7X30) YEL	A/R		04800322			BELDEN 60101250	8503 YEL	
000900	WIRE, HOOKUP 22AWG (7X30) GRN	A/R		04800405			BELDEN 60101250	8503 GRN	
001000	WIRE, HOOKUP 22AWG (7X30) BLU	A/R		04800439			BELDEN 60101250	8503 BLU	
001100	WIRE, HOOKUP 22AWG (7X30) VIO	A/R		04800314			BELDEN 60101250	8503 VIO	
001200	WIRE, HOOKUP 22AWG (7X30) SLT	A/R		04800447			BELDEN 60101250	8503 SLT	
001300	WIRE, HOOKUP 22AWG (7X30) WHT	A/R		04800355			BELDEN 60101250	8503 WHT	
001400	WIRE, HOOKUP 22AWG (7X30) WHT/RED	A/R		04800496			BELDEN 60101250	8503 WHT/RED	
001500	WIRE, HOOKUP 22AWG (7X30) WHT/ORN	A/R		04800371			BELDEN 60101250	8503 WHT/ORN	

P A R T S L I S T

TITLE OR DESCRIPTION: * HARNESS ASSEMBLY, ATTENUATOR 0302 *

PART/DRAWING #: 20014122

PREP	SPT 12/02/80
CHECK	OGT 12/08/80
APRVD	OJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	IST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
001600	WIRE, HOOKUP 22AWG (7X30) WHT/YEL	A/R		04800470			BELDEN 60101250	8503 WHT/YEL	
001700	WIRE, HOOKUP 22AWG (7X30) WHT/BLU	A/R		04800397			BELDEN 60101250	8503 WHT/BLU	
001800	WIRE, HOOKUP 22AWG (7X30) WHT/VIO	A/R		04800330			BELDEN 60101250	8503 WHT/VIO	
001900	WIRE, HOOKUP 22AWG (7X30) WHT/SLT	A/R		04800421			BELDEN 60101250	8503 WHT/SLT	
002000	CABLE TIE (3/4" MAX DIA BUNDLE)	2		05001227			TYTON 60103924	T18R	1028
002100	HARNESS SHEET (ATTENUATOR)	REF		50010115	A	A	WILCOM 60000015	0302- -	

******* END OF PARTS LIST *******

P A R T S L I S T

TITLE OR DESCRIPTION

* MAIN CHASSIS ASSEMBLY 0302 *

PART/DRAWING # 20014072

DWG SIZE: D | DWG REV: B | P/L REV: A

PREP SPT 12/02/80
CHECK DGT 12/05/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	ST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION: MFR NAME/NO.	MFR PART NO.	ECO NO.
000100	BASE PLATE	11		04413217	D	B	WILCOM 60000015	0302- -	
000200	FRONT PANEL ASSEMBLY	11		20014064	C	B	WILCOM 60000015	0302- -	
000300	PC ASSEMBLY, CPU/TONE GENERATOR	11		20012217	C	-	WILCOM 60000015	0302- -	
000400	PC ASSEMBLY, POWER SUPPLY	11		20014460	C	A	WILCOM 60000015	0302- -	
000600	CABLE ASSEMBLY	11		20012522	B	-	WILCOM 60000015	0303- -	
000700	HARNESS ASSEMBLY, MAIN W 1	11		20014130	C	A	WILCOM 60000015	0302- -	
000800	HARNESS ASSEMBLY, JACKS W 3	11		20014114	B	-	WILCOM 60000015	0302- -	
000900	BRACKET, SIDE	21		04413100	B	A	WILCOM 60000015	0302- -	1428
001000	PLATE, ALIGNING	61		04413399	A	-	WILCOM 60000015	0302- -	
001100	BRACKET, RACK MOUNT	21		04413043	A	-	WILCOM 60000015	0302- -	
001200	XFFMR,PWR:115/230 PRI,24CT @ 1A SEC	11		04201943			TRIAD 60105574	F-345X	
001300	SW, SLIDE, 115/230V SEC, VDE APPVD	11		01103504			SWCRAFT 60100732	EP81-SL1	
001400	FUSE, NORM: (1/4X1-1/4) 1 A	11		05000336			LITTLEFUSE 60101565	312001	
001500	FUSE HOLDER, 1/4X1-1/4, BLK, RND	11		05000427			NOTE 60103975	NOT FOR NEW DESIGNS	
001600	RECEPTACLE, POWER: 6A (NEW STYLE)	11		05201678			SWCRAFT 60100732	EAC-301	

P A R T S L I S T

TITLE OR DESCRIPTION	PART/DRAWING #	DWG SIZE	DWG REV	P/L REV		
MAIN CHASSIS ASSEMBLY 0302	20014072	D	B	A	PREP SPT	12/02/80
					CHECK DGT	12/05/80
					APRVD DJF	12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	IST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
001700	LOUDSPEAKER, 3" SQ, 45 OHM	1		05003405			QUAM 60103546	30A05Z4S	
001800	MS, PHIL, FLAT HD 4-40 X .250	12		04602413	P	-	WILCOM 60000015	S F 4-40X.250	
001900	MS, PHIL, FLAT HD 4-40 X .312	9		04602421	R	-	WILCOM 60000015	S F 4-40X.312	
002000	MS, PHIL, FLAT HD 8-32 X .500	1		04602611	R	-	WILCOM 60000015	S F 8-32X.500	11657
002100	MS, PHIL, PAN HD 4-40 X .250	5		04602041	R	-	WILCOM 60000015	S P 4-40X.250	
002200	MS, PHIL, PAN HD 4-40 X .312	10		04602058	R	-	WILCOM 60000015	S P 4-40X.312	
002300	MS, PHIL, PAN HD 4-40 X .437	2		04602074	R	-	WILCOM 60000015	S P 4-40X.437	
002400	MS, PHIL, PAN HD 6-32 X .250	2		04602124	R	-	WILCOM 60000015	S P 6-32X.250	11657
002500	WASHER, FLAT #4	4		04600730	R	-	WILCOM 60000015	W F 4	
002600	LOCKWASHER, HEL SPRING #4	16		04600599	R	-	WILCOM 60000015	W H 4	
002750	LOCKWASHER, EXT TOOTH #6	2		04600847	R	-	WILCOM 60000015	W E 6	11657
002800	NUT, HEX, 1/4 AF 4-40	8		04600581	R	-	WILCOM 60000015	N H 4-40	11657
002900	BUS WIRE, 22AWG	A/R		04800694			BELDEN 60101250	8021	
003000	WIRE, HOOKUP 22AWG UL 1015 BRN	A/R		04801122			ALPHA 60101284	3071 BRN	
003100	WIRE, HOOKUP 22AWG UL 1015 BLU	A/R		04801130			ALPHA 60101284	3071 BLU	

P A R T S L I S T

TITLE OR DESCRIPTION

* MAIN CHASSIS ASSEMBLY 0302 *

PART/DRAWING # 20014072 | DWG SIZE D | DWG REV B | P/L REV A

PREP SPT 12/02/80
CHECK DGT 12/05/80
APRVD DJF 12/10/80

LINE NUMBER	TITLE OR DESCRIPTION / REFERENCE DESIGNATION	QUAN	IST	WILCOM PART/DWG	DR SZ	DR RV	SOURCE INFORMATION MFR NAME/NO.	MFR PART NO.	ECO NO.
003200	WIRE, HOOKUP 22AWG UL 1015 GRN/YEL	A/R		04801155			ALPHA 60101284	3071 GRN/YEL	
003225	WIRE, HOOKUP 22AWG (SOLID) WHT	A/R		04801106			BELDEN 60101250	83404 WHT	11657
003250	TUBING, HEAT SHRINK, 1/8 DIA BLK	A/R		04800173			ALPHA 60101284	FIT 221-1/8" BLK	11657
003300	TUBING, HEAT SHRINK, 3/16 DIA BLK	A/R		04800181			ALPHA 60101284	FIT 221-3/16" BLK	
003400	TUBING, HEAT SHRINK, 1/2 DIA BLK	A/R		04801379			ALPHA 60101284	FIT 221-1/2" BLK	
003500	BOOT (NEW STYLE)	1		05015771	A	-	WILCOM 60000015	0051-00-133	
003600	SOLDER LUG (FOR #4 FASTENER)	1		05019807			H H SMITH 60101300	1414-4	
003800	CABLE ANCHOR, NYLON: ADHESIVE BACK	6		05002027			PANDUIT 60101581	ABMS-A	
003900	CABLE TIE (3/4" MAX DIA BUNDLE)	6		05001227			TYTON 60103926	T18R	
004000	LABEL, MODEL & SERIAL NO.	1		06A08786	A	-	WILCOM 60000015	0302- -	11428

******* END OF PARTS LIST *******

9.0 DIFFERENCE DATA

9.1 General - This section of the manual indicates information relative to changes in circuitry, operation or features of the Model T302 DTMF/MF SENDER.

9.1.01 Each change is referenced to a specific engineering change order (ECO) or engineering change notice (ECN). The ECO/ECN number and the units that are affected are located in the left column. The specific reason for the change is indicated in capital letters with the details of the change immediately following.

9.1.02 To facilitate component location/replacement, the complete reference designator is called out. In addition, the Wilcom part number and brief component description are listed for all component changes. Where necessary, a drawing is included that shows the changes.

MODEL T302

MANUAL CHANGE INFORMATION

CHANGE	DESCRIPTION
#1447 all units	INCORRECT HOLD COIL MARKING Some units were shipped with hold coils A3L1 and A3L2 incorrectly marked as 042-0185-1. The correct marking is 042-0211-5 and this number should be ordered if replacement is required. Those coils incorrectly marked do not require replacement, unless found to be defective.
#1638 all units	TO ELIMINATE DUPLICATE COMPONENT LISTINGS Resistor A3R38, 866 ohm 1%, .25w, was originally listed as 00109082 and has been changed to 00101253, an identical 866 ohm 1%, .25w resistor.
#1800 all units	TO INDICATE CORRECT PART NUMBER Bracket 200-1450-2 should be 044-1310-0 on drawing 200-1407-2, page 7-17. The parts list on page 8-25 line 900 is correct. Drawing 200-1407-2 revision B is now revision C.
#1802 all units	MINOR DOCUMENTATION CORRECTIONS Fuse F1 on drawing 500-1004-0, page 7-9 should be 1 amp not .25 amp. This drawing is now revision B. Drawing 200-1406-4, page 7-11 is now revision C and should reflect the following: P10 is now W1P4 P3 is now W1P3 P2 is now W2P1 Switch 011-0268-0 is labeled S1 Diode at right of S1 is labeled DS1 Drawing 200-1221-7, page 7-4 is now revision A and shows stand-up resistors at outside edges of component mounts, so that values may easily be read. Drawing 500-0760-8 page 7-5 is now revision A. Pin 4 of J2 now reads "DP-NOT USED". The note for option X and Y is not used. All units are strapped for option X. Pin 8 of J3 now shows SEND/TALK. Drawing 500-1105-5 page 7-3 is now revision A. Resistor R23 is fixed at 20.0 k. The arrow from "HEADSET XMIT LEVEL" is removed and shown going to the line between R23 and U4C. Reference designator W2P1, W1P3 and W1P4 added at J2, J3 and J10 respectively. The output at J1 pin 13 should be "SEND/TALK".

Appendix A

DTMF Pulsing

Digit	Composite tone pair frequencies (Hz)
1	697 + 1209
2	697 + 1336
3	697 + 1477
4	770 + 1209
5	770 + 1336
6	770 + 1477
7	852 + 1209
8	852 + 1336
9	852 + 1477
*	941 + 1209
0	941 + 1336
#	941 + 1477
A	697 + 1633
B	770 + 1633
C	852 + 1633
D	941 + 1633

Appendix B

MF Pulsing

Digit	Composite tone pair frequencies (Hz)
1	700 + 900
2	700 + 1100
3	900 + 1100
4	700 + 1300
5	900 + 1300
6	1100 + 1300
7	700 + 1500
8	900 + 1500
9	1100 + 1500
0	1300 + 1500
KP	1100 + 1700
ST	1500 + 1700
STP	900 + 1700
ST2P	1300 + 1700
ST3P	700 + 1700

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